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Spotlight
Bypass: what's here, what's ahead/15

In Depth
Roles managers must play 69/13

Crime and punishment
Bills dealing with DP crime languish in Congress/12

Ecom
New lease on life?/14

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NEWSPAPER

TOP OF THE NEWS

All tied up: Three vendors, including Data General Corp., have announced micro-to-mainframe links. Page 2.

■

Trying perhaps to unload older rental and lease agreements, IBM last week raised its convenience agreement rates on most older hardware by 7% to 10%. Page 4.

■

Building up its Tower line of supermicros, NCR Corp. last week added a Cobol-oriented processor. The new I-Tower replaces NCR's aging I-9020 minicomputer series. Page 6.

■

Two more Stars are on the horizon for users. They were introduced last week by Xerox Corp., which lopped almost one-third off the price of its 8010 Star model. Page 6.

■

Half the pregnancies of VDT operators ended "adversely" during a four-year period at United Airlines' telephone reservations office in San Francisco, 6 to 5 reported last week. Page 9.

■

Simpler than Basic, more powerful and elegant than either Pascal or PL/I and offering debugging, portability and modular programming capabilities that outstrip all three. That is how a member of a University of Toronto research team described Turing, a general-purpose programming language the team recently developed. Page 43.

■

The road to the kingdom of on-line, integrated, central data base systems is full of potholes for some application software developers. Page 93.

■

International group forcing U.S. hand on Cobol standard

By Paul Gillin
CW Staff

VIENNA — The International Standards Organization's working group on Cobol-80 last week bucked tradition and adopted a proposed American National Standards Institute X3J4 Committee standard and modifications before public review or approval by the parent X3 Committee.

The move could signal a breakthrough in the deadlocked attempts to reach a Cobol-80 standard.

In an unusual move, the ISO Technical Committee 97/Standing Committee 5/Working Group 6 approved and sent on to the parent SC5 Committee the most recent Ansi X3J4 proposal — sometimes called the "pink book" — and X3J4's "S" and "D" modification documents. The move came despite the fact that the standard is scheduled to undergo at least one more limited public review — a process that could last into 1985 — before it is submitted to Ansi's X3 Committee.

If the WG6 recommendation is approved, the machinery would be set in motion to adopt an international standard before the Ansi standard is approved, a highly unusual action, sources said.

The Cobol-80 standard has been un-

See COBOL-80 page 6

Lotus adds two steps to '1-2-3'

NEW YORK — Lotus Development Corp. last week added steps four and five to its fast-selling Lotus 1-2-3 integrated microcomputer software package when it unveiled a single-floppy program that includes word processing, communications, graphics, spreadsheet and data base capabilities.

The $695 program, named Symphony, will be available July 2 for the IBM Personal Computer and Personal Computer XT. The five-function package requires 320K bytes of random-access memory, but its data base function needs 640K bytes of RAM, the stiffest dose of memory available on the Personal Computer, to operate at full strength, a spokesman said.

Symphony includes a window management system that allows a user to create an unlimited number of windows and to enter data simultaneously through each of them, according to Lotus President Mitchell Kapor.

Other features include a word processing-to-communications link, the ability to store 8,000 records in the data base, a spreadsheet of 8,192 rows by 256 columns, a zoom key for enlarging a window to full screen size and a command language for manual programming.

The word processor, which Lotus described as being similar to those offered by Wang Laboratories, Inc., can combine data

See LOTUS page 6

FYI

Making (and putting) their mark on micro software

By John Gallant
CW Staff

When Philip Raymond likens his software testing company to Underwriters Laboratories, Inc. and *Good Housekeeping* magazine, the comparison is not made casually. Nor is that analogy used solely by Raymond.

Raymond's firm, Peripheral Vision Co. of Marlboro, Mass., is one of at least three companies that currently offer to stamp their seals of approval on microcomputer software that has met their testing requirements. For the other two — the International Bureau of Software Test of Sunnyvale, Calif., and Benchmark Computer Systems, Inc. of Edina, Minn. — as well as for Peripheral Vision, comparison with the *Good Housekeeping* and UL seals of approval is an important marketing tool to bolster credibility.

IBST is the only firm among the three that deals solely with software testing and approval. The company has been in business since 1982 and currently employs 26 consultants and full-time software experts who put new software packages through their paces on a variety of micros in IBST's testing labs.

If a package is fully approved by the test team, according to IBST President William Goss, its manufacturer can display IBST's Seal of Approval, which is earned by about 15% of the packages tested.

Like Peripheral Vision and Benchmark Computer Systems, IBST claims to employ rigorous, structured testing methods that involve at least three experts. "We're independent, and we take a systematic, thorough approach," Goss said. "We find problems that the in-house testing team might have overlooked. The software developer is often too involved with the product to be objective, and he might overlook problems we can catch."

Raymond, a former design engineer who left Digital Equipment Corp. in 1982 to found Peripheral Vision, said the Peripheral Vision Software Seal of Approval can be a powerful marketing tool for a software manufacturer. "Buyers can't judge software from its packaging or its documentation. They can't choose between 10 or 15 similar packages simply on what they say on the outside. Our position as an independent software testing firm will help buyers to choose one vendor's package over another's."

Raymond claimed Peripheral Vision's revenues from software testing grew from 20% to 50% of its annual earnings last year alone. Raymond's network of consultants also reviews technical manuscripts for most major publishing companies. Peripheral Vision has targeted the stamp of approval service at the publishing firms, Raymond explained, as they enter the micro software marketplace.

"We sell a comprehensive strategy of software integrity approval to the software publishing industry. We want to help the publishers of printed media use their established market position to sustain a foray into software publishing and distribution," Raymond said.

Benchmark Computer Systems has taken a slightly different approach to soft-

See SEALS page 10

Three tie micros to mainframes

DG board links its small units to IBM CPUs

By Susan Blakeney
CW Staff

WESTBORO, Mass. — Data General Corp. has introduced a communications interface that is said to permit direct communications between IBM mainframes and DG's Desktop Generation, Eclipse S/20 and Eclipse C/30 low-end processors. The product is scheduled to make its debut today at the Office Automation Conference in Los Angeles.

The ISMC/2 is a two-channel, front-end, intelligent synchronous micro controller board that enables its processors to offload high-speed synchronous communications for more efficient file transfer and interactive communications, according to a DG spokesman.

Supported by DG's bisynchronous DG/SNA and X.25-compliant Xodiac communications software products, the ISMC/2 lets the Desktop Generation, S/20 and C/30 systems connect directly to a Systems Network Architecture/Synchronous Data Link Control or public data network, as well as DG's own network, the vendor said.

Direct tie to IBM CPUs

The ISMC/2 gives the Desktop Generation a facility for communicating directly with IBM mainframes via DG's bisynchronous and DG/SNA products.

The product, which runs under DG's AOS and AOS/WS operating systems, is a single 7- by 9-in. printed-circuit board that reportedly fits into any unreserved slot in the CPU chassis or expansion module of a Desktop Generation Model 10SP, Eclipse 20 or Eclipse 30, according to a spokesman for the vendor.

The ISMC/2 is composed of a 16-bit Microeclipse processor with 32K bytes of dynamic random-access memory, a host I/O system and two communications channels. Each channel is capable of full-duplex communications, with modem control and a choice of interface, the vendor noted.

At press time, the price for ISMC/2 was set at $1,650. Additional information is available from DG, located at 440 Computer Drive, Westboro, Mass. 01580.

CORRECTIONS

An announcement of the Cause on-line member data base (CW, Jan. 23) should have stated that the data base includes information from more than 150 different applications divided into 10 areas.

An announcement of Syncsort, Inc.'s Syncsort OS Release 2.5 (CW, Feb. 6) failed to state that the major enhancement to the new release is performance improvements of between 15% and 35%.

Real-time link ties IBM micro to SI software

By John Gallant
CW Staff

ANDOVER, Mass. — Software International Corp. last week entered the micro-to-mainframe communications market by announcing a real-time link between its mainframe general ledger package and a variety of applications that run on the IBM Personal Computer.

Smart Link enables Personal Computer users to extend the data extraction and manipulation resources of Software International's on-line General Ledger and Financial Reporting System at the micro level, a spokesman said.

The product is said to provide for on-line, real-time extraction of live data and does not use any batch processing mechanisms to create a shadow file accessed by the micro.

No modifications

Smart Link reportedly requires no modifications to Software International's General Ledger and Financial Reporting System on the mainframe. It provides users with the ability to perform operations such as data input and report production on the Personal Computer that would otherwise be performed on an IBM 3270 terminal.

In addition, Smart Link reportedly uploads budget information to appropriate mainframe general ledger files under comprehensive security and audit trails.

Restricted upload capabilities are provided to prevent loss of mainframe data integrity, the spokesman said. The security systems are the same as those that govern access to Software International's mainframe applications.

Smart Link also allows users to load data into a variety of current spreadsheet packages and data base management systems, including Lotus Development Corp.'s Lotus 1-2-3, Visicorp's Visicalc and Microsoft, Inc.'s Multiplan. It will also operate with micro applications that incorporate Software Arts, Inc.'s Data Interchange Format.

Smart Link does not require rekeying of commands in order to rerun a download or upload session, the spokesman noted. It automatically recalls a session if it was stored in Smart Link's library; sessions can be modified to give new download or upload specifications.

Data from the General Ledger and Financial Reporting System can be placed into a specific area of the user's spreadsheet for greater flexibility, according to a spokesman for the vendor.

Smart Link will run on the IBM Personal Computer or Personal Computer XT equipped with Technical Analysis Corp.'s Irma board coaxial interface.

The software is priced at $2,995 per micro from Software International, 1 Tech Drive, Andover, Mass. 01810.

Products help micro emulate 3270 terminal

By Jeffry Beeler
CW West Coast Bureau

SANTA CLARA, Calif. — A one-year-old data communications vendor claims to have tightened the integration between IBM Personal Computers and CPUs with the introduction of a micro-to-mainframe link that reportedly enhances a Personal Computer's 3270 emulation features.

Forte Data Systems, Inc.'s micro-to-mainframe link consists of six related hardware and software modules:

- Forte-PJ, an emulation and adapter board that provides IBM Personal Computers and Personal Computer XTs with a coaxial cable interface to 3270-based networks and allows the micros to emulate 3278 and 3279 display terminals.
- Forte-Graph, a "daughter" board that enables Personal Computers to duplicate the IBM 3279 color display station's color graphics capabilities and produce hard-copy output with the same resolution as the micros' display screens.
- Three File-Net packages that permit mainframes to download whole TSO, CICS or CMS files at once rather than in one-page sections.
- Forte-Call, a Personal Computer-resident communications utility that allows remote terminal users to dial into 3270 coaxial cable networks and thus gain access to corporate data bases.

Forte-PJ occupies one Personal Computer or Personal Computer XT chassis slot and — in an effort to simplify future product upgrades — implements all its associated software on diskettes rather than in programmable read-only memory.

When equipped with the board, IBM Personal Computers can double as terminals interacting with host mainframes and as stand-alone processors operating in the PC-DOS operating system mode, according to Forte Product Manager Ron Rawson. Users can reportedly switch back and forth between a mainframe session and stand-alone operation by touching just one button on a Personal Computer's keyboard.

Forte credits its PJ board with supporting up to 32K bytes of buffer memory, eight times as much as the company's existing 3270 emulation product, the PC78-2. This expanded storage capacity, in turn, allows an IBM Personal Computer or Personal Computer XT to emulate a larger set of 3279 color graphics capabilities than was previously possible with the 4K-byte PC78-2, Rawson said.

In addition to its increased buffer memory, Forte-PJ incorporates an interface expansion bus into which users can plug various daughter boards and thus enhance a Personal Computer with additional "personality" or functionality, he said.

One such daughterboard is Forte-Graph, which rides piggyback on the PJ and gives IBM micro users ac-

See FORTE page 4

NEWS SUMMARY

IBM raised by 7% to 10% its convenience agreement rates on most older hardware and the license fees for about half its system and language program products/4

Cortex Corp. unveiled an application generator for the Digital Equipment Corp. VAX-11 that it said virtually eliminates hand-coding/4

A Cobol-oriented version of its Tower 1632 supermicro has replaced NCR Corp's I-9020 minicomputer line/6

Xerox cut the price of its 8010 Star microcomputer by almost one-third and added stand-alone and remote workstations to the Star line/6

The National Association of Working Women, 9 to 5, said 50% of the pregnancies of VDT operators at United Airlines' telephone reservation office in San Francisco ended "adversely" over a four-year period/8

The Association for Computer Operations Managers predicted an average salary increase of 7% for computer operations personnel this year/11

Little action is slated for a variety of federal computer crime bills under consideration by Congress/12

A recommendation from the U.S. Postal Rate Commission, due this Friday, could rejuvenate Ecom/14

Product Spotlight: Bypass/16

The Yankee Group recently offered insights on IBM hardware strategies/17

The former marketing director of Systems Development Co. has been indicted on charges of tying to bribe a Massachusetts official/19

Armed with printouts, Indianapolis police nabbed hundreds of scofflaws at work/23

An IBM consultant has compiled 600 terms that he hopes will become the standard sign language of DP terminology for deaf DP professionals/27

A service bureau doubled in a year the number of tax returns it processed for 400 accountants/28

The Long Island Lighting Co. has broken the "language barrier" between computers and employees/29

International Report/24
Turnaround Time/26
Calendar/30

IN DEPTH

Fourth-generation software/ID/1
Roles DP managers must play/ID/13

EDITORIAL/34
SOFTWARE & SERVICES/43
COMMUNICATIONS/50
SYSTEMS & PERIPHERALS/57
MICROCOMPUTERS/69
COMPUTER INDUSTRY/93

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Application generator ends hand-coding for VAX

By Paul Gillin
CW Staff

WELLESLEY, Mass. — Cortex Corp. last week introduced an application generator for Digital Equipment Corp. VAX-11 superminis that it said virtually eliminates the need to write code for standard applications.

Called the Application Factory (Factory), the software allows systems analysts and programmers to develop applications through an interactive terminal dialogue. It constructs applications that include screens, reports, computations and data base management. Programs can be customized and regenerated using the Cortex Application Builder (Builder), a high-level language, a Cortex spokesman said.

Factory can be used to prototype working models and is said to eliminate much of the program design, coding and testing process. It generates modules written in Builder, which can be modified.

Factory provides standard procedures, such as menu screens and the standard mechanisms for using them, such as menu items, which the designer fills in interactively. Program modules can be specified interactively and code generated automatically.

Factory ensures that a generated module is consistent with the data and with other modules, the spokesman said.

Among the activities supported by Factory are data set creation, data dictionary specification, the linking of data sets into logical views, screen layout, report layout, definition of menus, coordination of logical flow, data validation specification and data extraction specification.

An optional facility called Customizer allows screen and report characteristics to be changed. The Application Accelerator, also an optional facility, generates object code from Factory source code, enabling programs to run as efficiently as Cobol programs, the spokesman claimed. Without Accelerator, Factory generates a pseudo-code that executes more slowly.

Still another optional module, Application Targeter, allows applications to be generated in object code to run on other machines within the DEC line, including the VAX-11 series, PDP-11 series and DEC Professional 350.

The Run-Time System, also an option, provides an interface to the file system of the target machine. The End-User Facility is an option that gives end users limited query, sort and report-generation functions.

For the VAX-11/750 and VAX-11/780, the Application Factory costs $25,000. The cost of the options are: Customizer, $10,000; Application Accelerator, $15,000; Application Targeter, $15,000; Run-Time System, $2,500 and End-User Facility, $8,000.

A package made up of the Application Factory, Accelerator or Targeter, Customizer and End-User Facility costs $49,000. All products cost 40% less for the lower end of the VAX-11 line.

Cortex is located at 55 William St., Wellesley, Mass. 02181.

Cornellian wins ACM award

ITHACA, N.Y. — A postdoctoral associate in the department of computer science at Cornell University has won the 1983 Doctoral Dissertation Award of the Association for Computing Machinery (ACM).

Thomas Reps won the award for "Generating Language-Based Environments," a thesis he wrote while earning his Ph.D. in 1982. The award includes a $1,000 check, publication of his thesis by MIT Press and royalties from sale of the book.

The award was announced at the ACM Computer Science Conference Feb. 14-16 in Philadelphia.

FORTE from page 2

cess to all the 3279 graphics software packages residing in central mainframes. The board thus enables Personal Computers to support as wide a selection of colors as the 3279 and to provide the same display resolution and extended character attributes, Rawson said.

Complementing Forte-Graph are three mainframe-resident file transfer packages — TSO File-Net, CICS File-Net and CMS File-Net. All three are extensions of their respective IBM subsystems' command language and are written in 370 assembler, a feature that maximizes communications efficiency, Rawson said.

The result is that the packages allow complete TSO, CICS or CMS files to be downloaded from a mainframe all in one operation rather than in one small chunk at a time. File-Net therefore overcomes one of the main limitations of usual 3270 emulation, which typically requires files to be transmitted to a Personal Computer in one-page segments, according to Forte President James Ottinger.

After being downloaded from a host CPU to a Personal Computer, data is reportedly displayed in PC-DOS formats to simplify integration of the files with popular microcomputer applications like spreadsheets and word processing.

The last of the six Forte communications is Forte-Call, which is said to allow any remote Ascii device to retrieve data from a central mainframe through a host Personal Computer.

Forte-Call costs $295, compared to $1,195 for the Forte-PJ board and $1,395 for the Forte-Graph board and all its associated software. The TSO File-Net and CMS File-Net packages license for $1,000 each, while the CICS version is available for a one-time license fee of $10,000 per site.

All six of the Forte micro-to-mainframe link products will be available for shipment in April from the company at 1500 Norman Ave., Santa Clara, Calif. 95050.

Convenience pact rates, license fees raised by IBM

By Tom Henkel
CW Staff

RYE BROOK, N.Y. — In what appears to be an effort to rid itself of older rental and lease agreements, IBM last week raised its convenience agreement rates on most older hardware by 7% to 10%.

At the same time, the company also raised the license fees on about half its system and language program products by the same 7% to 10%.

Monthly maintenance rates on a handful of older products also underwent changes. Some were increased by as much as 10%, while others were decreased by 10%.

Most users affected by the increases are holders of lease and rental agreements signed before IBM established the IBM Credit Corp.

Convenience lease and rental agreements are those offered directly through IBM rather than the IBM Credit Corp. Most users affected by the increases — effective June 1 — are holders of lease and rental agreements signed before IBM established the IBM Credit Corp.

Processors affected by the increases include the 4321, 4331 and 4341; the 8130 and 8140; the System/34; and the 3060 series. Exempted from the increases were the System/38 and systems announced after the formation of the IBM Credit Corp., which include the 4361, 4381 and 8150, a spokesman said.

As examples of the price increases, IBM said a System/34 Model D23 processor, which formerly carried a convenience lease price of $1,860/mo, will now cost $1,990. The convenience rental fee on the same model is now $2,189 instead of $2,045.

A 3084 Model Q48 processor, which formerly carried a convenience monthly lease rate of $289,920, now costs $310,200. The rental fee for the same processor is now $387,000/mo instead of $362,400.

Initial and monthly license fees on roughly half the systems and language software program products and a small number of applications program products were also increased 7% to 10%. The increases in initial license fees are effective immediately; monthly license fee increases are effective June 1.

The license fee increases affect about 20% of all IBM program products and include the MVS/SP operating system, CICS/OS, VM/High-Performance Option, IMS/Data Base/Data Communications, all software for the System/38 and System/34, the DPPX operating system for IBM's 8100 line of distributed processing systems and OS/Cobol. Monthly software service charges on all IBM software were also increased by 7% to 10%. For example, users formerly paid $1,170 for the monthly license program support charge (MLPSC) for MVS-SP Version 2 Job Entry Subsystem 3. They will now pay $1,250.

DPPX/Distributed Presentation Services (DPPX/DPS) carried a basic license charge of $186, which has been increased to $199. The MLPSC has been increased from $18 to $19.

Finally, IBM announced both price increases and decreases in the monthly maintenance fee of a handful of IBM hardware products. The price changes range from 10% decreases to 10% increases.

The decreases are effective March 1, and the increases are effective June 1, IBM said.

Major systems that received price decreases include the 30 series of mainframes and the smaller System/3 and System/7 processor lines. Systems hit by maintenance price increases include the 3431 and the 4321.

The $5,810/mo maintenance charge on a 3033U Model U16 processor has been dropped to $5,520. But users of 4331 Model J11 processors will now pay $351/mo instead of $335.

Equipment purchase prices were left unchanged, as were IBM Credit Corp. three-, four- and five-year term leases. According to the spokesman for IBM, the price changes were a result of a normal business review.

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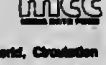

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NEWS

NCR brings out Cobol-oriented supermicro

By Tom Henkel
CW Staff

DAYTON, Ohio — NCR Corp. last week replaced its aging I-9020 line of minicomputers with a Cobol-oriented version of its Tower 1632 supermicro.

Called the I-Tower, the new system offers two to six times the internal performance of the I-9020, NCR said. The I-Tower's hardware is virtually identical to the Unix-based Tower system announced by the firm a year ago, the vendor said, noting that both are based on Motorola, Inc.'s 68000 microprocessor.

The I-Tower supports RM/Cobol, a specialized version of Cobol developed by a long-time supplier of NCR software, Ryan-McFarland Corp. of Rolling Hills Estates, Calif.

The I-Tower system also runs Ryan-McFarland's RM/COS, which optimizes the execution of Cobol programs.

Users of the original Tower 1632 can now run Cobol on their systems. This, according to Jim Krohe, program manager for the Tower line, can be done in two ways. Users can run RM/Cobol directly on the Unix operating system, or they can run both Unix and Ryan-McFarland's RM/COS. He noted, however, that the operating systems cannot run concurrently.

Likewise, users of the I-Tower can, if they wish, purchase the Unix operating system for nonconcurrent use.

Krohe said NCR plans to offer RM/COS, RM/Cobol and Unix packages to Tower 1632 and I-Tower users, but the packages are not yet available.

While NCR representatives seemed unclear on how the firm plans to market the I-Tower, its assistant vice-president of interactive systems, John C. Duritsch, said one group of potential users is microcomputer users who have exhausted the capabilities of their current systems. He noted that from a performance standpoint, the I-Tower offers roughly the same power as IBM's System/36 or Burroughs Corp.'s B93 series of processors.

The I-Tower can run some existing 1 series applications, including NCR's Interactive Financial Management System (IFMS). It also supports off-the-shelf programs that operate under Ryan-McFarland's RM/Cobol compiler and RM/COS operating system.

While the I-Tower is not directly compatible with larger processors in the NCR line, users of RM/Cobol can migrate to the larger I-9300 line of mainframes by making a software conversion, according to Raymond B. Smith, director of general-purpose systems product marketing. To switch to the I-9300 line, I-Tower users will have to make file modifications and recompile their Cobol programs. Smith claimed the conversion process is a minor task, requiring about two hours per program.

The I-Tower can handle 16 users and is equipped with 512K bytes of standard random-access memory (RAM). It can be expanded with a processor memory control module that offers up to 2M bytes of RAM.

The I-Tower supports up to two 5¼-in. floppy disk drives, each offering 1M byte of storage, and a maximum of two 5¼-in. Winchester disk drives, each offering up to 46M bytes of unformatted storage. Two 8-in. Winchester disk drives, each offering up to 84M bytes of unformatted data storage, can be used in addition to the 5¼-in. Winchester drives for a total disk storage capacity of 260M bytes.

The I-Tower includes a 90 in./sec streaming tape drive, which can store 21.6M bytes of unformatted data, as well as a battery-powered memory support feature designed to protect the system against power fluctuations.

An I-Tower processor with 512K bytes of RAM, 46M bytes of Winchester disk storage, a 1M-byte flexible disk drive, a 20M-byte streaming tape drive, a 125 line/min printer, CRT terminal, eight RS-232C I/O ports, IBM 2780/3780 remote batch communications protocols, RM/COS and RM/Cobol costs $28,860. It will be available next month and distributed through the firm's direct sales force.

NCR's corporate headquarters is located in Dayton, Ohio 45479.

ANALYSIS

NCR becomes first to replace mini with supermicro

By Tom Henkel
CW Staff

NCR Corp. has scored a first with its newly announced I-Tower Cobol-oriented supermicrocomputer: It became the first of the big five computer vendors to replace an existing minicomputer line with a supermicrocomputer.

Whether NCR can parlay the newly announced system into a highly successful product, however, remains to be seen.

NCR stated that the I-9020, the mini line replaced by last week's announcement of the I-Tower, has been its most successful product to date, with more than 20,000 installed systems. However, NCR representatives who presented details of the I-Tower last week did not seem to have a clear focus of who that system's target user would be.

One obvious market for the I-Tower is as a replacement processor for I-9020. NCR said the I-Tower can operate up to six times faster than the I-9020, but users who want to make the switch from an I-9020 must convert from NCR's Imos operating system to Ryan-McFarland, Inc.'s RM/COS.

The other market NCR appears to be eyeing for the I-Tower are microcomputer users who have exhausted the capabilities of their single-user systems. How NCR plans to attack that market remains unclear.

Raymond B. Smith, NCR's director of general-purpose systems product marketing, noted that NCR has approached traditional NCR third-party software developers to adapt existing Cobol programs for the I-Tower. But that raises the question of how that list of Cobol programs compares with the list of Basic programs available for microcomputers. And will NCR be able to convince micro users, who have been weaned on Basic, to switch to Cobol?

Jim Krohe, NCR's program manager for the Tower line, noted that there are currently more than 1,000 off-the-shelf programs that run under RM/COS. Krohe said that it is a fairly simple process to convert other Cobol programs to run under RM/COS.

NCR estimates it will take users 15 minutes to two hours per program to convert to the RM/Cobol compiler. Krohe said the amount of time the conversion takes depends on how much non-Ansi-standard code a given Cobol program uses. Users of strict Ansi-standard Cobol would just have to recompile Cobol programs to use them under RM/Cobol.

Regardless of whether NCR cracks open a new market for small business users, the I-Tower may carve out an alternate, profitable niche for the Tower line, said Dave Moschella, an analyst with the Framingham, Mass., market research firm International Data Corp.

According to Moschella, NCR has basically acted as a systems integrator in developing the Tower line, basing it on the Motorola, Inc. 68000 microprocessor, OEM peripherals and third-party software. The original Tower 1632, announced about a year ago, has shown moderate success as a small business system, Moschella said, noting many Tower sales have gone to systems integrators, not end users.

But NCR's assistant vice-president of interactive systems, John C. Duritsch, disagreed with Moschella. He contended that NCR has also been able to sell the Tower 1632 to end users. In any case, both Moschella and Duritsch agreed that NCR is fairly pleased with sales of the Unix-based version of the Tower.

Moschella said the Cobol-oriented I-Tower is probably guaranteed at least limited success just on the strength of the I-9020 market. Moschella added that since NCR is simply remarketing an existing system to a new audience, the development costs associated with the newly announced I-Tower are very low.

Xerox cuts 8010 Star price; adds stand-alone, remote models

By Tom Henkel
CW Staff

PALO ALTO, Calif. — Xerox Corp. appeared to be trying to rekindle a market for its 8010 Star microcomputer last week when it slashed $5,000 from the micro's $15,055 purchase price and added stand-alone and remote workstations to the Star line.

Announced in 1981 to operate with the Ethernet local-area network, the 8010 Star was greeted with a great amount of interest because it employed such innovative features as multiple windowing, a mouse and icons. However, the network workstation was never very successful because, industry watchers say, it was far too expensive and possibly too sophisticated for what was then a new market. Critics of the system said Xerox simply missed what turned out to be a very fertile market for smaller, stand-alone microcomputers.

Currently, Xerox apparently is trying to reignite the Star. The stand-alone and remote workstation models announced last week are essentially identical to the original network workstation, but they do not require users to buy cabling and pay the service charges for Ethernet.

The stand-alone model, which costs $8,995, is equipped with the same proprietary 16-bit microprocessors used in the network workstation. It comes with 512K bytes of random-access memory; a 10M-byte hard disk drive; a 1.2M-byte, 8-in., double-sided, double-density floppy disk drive; and Xerox's proprietary Mesa operating system.

What is missing from the system are circuit boards that allow it to be connected to Ethernet. However, the stand-alone unit is field upgradable to the remote workstation and the network workstation, Xerox noted.

The remote workstation is offered in the same configuration as the stand-alone workstation, but it is equipped with communications capabilities that allow it to communicate with an Ethernet system via an RS-232C port. To the user, the workstation operates as if it were attached to a local-area network, but the user also has the ability to perform local computing.

Xerox made its announcement through its Office Systems Division, located at 3333 Coyote Hill Road, Palo Alto, Calif. 94304.

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COBOL-80 from page 1

broiled in controversy since the first Ansi draft standard was released in 1980. Critics charge that conversion to Cobol-80 would be expensive and time-consuming. Supporters say the standard would add significant features that could make Cobol a viable alternative to many fourth-generation languages.

Action 'closes debate'

The ISO action on the X3J4 standard "effectively closes debate on the American side," said Jerome Garfunkel, president of Jerome Garfunkel Associates, Inc. in Litchfield, Conn., and a member of the Ansi X3J4 and ISO Cobol committees. "I expect [Ansi] will also go along and adopt this as a standard."

Another X3J4 Committee member concurred that the action puts pressure on Ansi to come to an agreement quickly. "The implications are that we are essentially going to lose some control on finalizing a standard," said Lawrence K. Madison, associate director of data processing at the Travelers Insurance Co. in Hartford, Conn.

Lemuel Skidmore, manager of systems development and educational services at New England Data Services in Guilford, Conn., called the ISO action "very important. . . . It says the international community is not pleased with the slowness of our process, and they're going off on their own."

"It's a political game that's being played," Madison said. "The international community is essentially saying, 'Hey, Ansi, let's get going on this.' "

Garfunkel, who has been an outspoken proponent of a new standard, said adoption by the ISO SC5 Committee will force the federal government to adopt the standard as a base for hardware procurement. He noted that hardware vendors will probably follow the government's lead.

Skidmore agreed that hardware vendors may add impetus to the project by standardizing their compilers based upon whichever standard is adopted first. "If I were IBM, I wouldn't want to be married to two different standards. I'd say it's more important that they match up," he said.

However, Madison pointed out that any ISO action is still subject to a six-month international letter ballot, at which time problems could arise. "If the international organization says, 'Let's throw caution to the wind and try to pass something through,' they may find out what X3J4 found — that it's not that easy to convince users who have a substantial investment [in existing programs]," Madison maintained. "Just because [WG8] has made a recommendation, doesn't mean it will be adopted."

The Data Processing Management Association's (DPMA) principal representative to the X3 Committee indicated that the standardization process is too far along to be rushed by international pressures. "We feel that if the progress that's been made on X3J4 continues, we'll see a draft standard that DPMA can approve shortly," Art Dubnow, who is chairman of the DPMA's Standards Committee, said.

ISO changes procedures for making Cobol revisions

VIENNA — At the same time that it approved and sent on for review the latest version of the Ansi X3J4 Committee's proposed Cobol-80 standard and modifications, an International Standards Organization (ISO) working group last week also adopted a resolution to change the current procedures for revising the language.

The resolution approved by the ISO Technical Committee 97/Standing Committee 5/Working Group 8 proposes to add new features to the Cobol standard every two years. It also extends the period between complete overhauls of the standard to 10 years.

Currently the standard is slated to be revised entirely every five years. But controversy over proposed revisions has delayed the adoption of the Cobol-80 standard by more than three years.

According to the resolution's originator, Jerome Garfunkel, a member of the Ansi X3J4 and ISO Cobol committees, the resolution would make it easier to keep Cobol current with state-of-the-art languages. "Very few people ever had complaints about new features," said Garfunkel, president of Jerome Garfunkel Associates, Inc. in Litchfield, Conn. "This proposal is designed to isolate new features and speed up development."

But critics believe adoption of the dual schedule could pose serious compatibility problems. "If you're going to slow down the clarification process, you're dropping the portability issue," said Lemuel Skidmore, manager of systems development and educational services at New England Data Services in Guilford, Conn. "The faster you introduce new features, the less time you have to clarify them."

Skidmore noted that the resolution could result in a proliferation of incompatible compilers that include new features that have not been fully studied. "If we keep changing the standard, we open the door to more incompatibility," he said.

LOTUS from page 1

base functions, communications, spreadsheet and graphics and allows users to preview documents as they will appear when printed.

The communications package combines terminal emulation, automatic dial-up and logon to remote data bases, data capture, point-to-point file transfer and user control of all terminal parameters. Users can instantly suspend a communications session, analyze the captured data using Symphony and return to the communications mode, the spokesman claimed.

The forms-oriented data base lets the user enter a list of items to be included and automatically creates the basic data base structure. It includes report generation employing the spreadsheet and, when combined with the word processor, offers the ability to perform mail-merge functions.

The expanded spreadsheet is compatible with Lotus' 1-2-3 spreadsheets and includes a new ability to manipulate text as well as numeric information in spreadsheet models.

Asked if Symphony would be adapted for the IBM 3270 Personal Computer, Kapor said his company had as yet made "no definite commitment" to adapt the product to micros other than the Personal Computer and Personal Computer XT. However, he added that Lotus has a broad intention of making Symphony available eventually on all boxes that can run 1-2-3.

At present, 1-2-3 also operates on Texas Instruments, Inc.'s Professional Computer; Zenith Data Systems Corp.'s Z100; Wang Laboratories, Inc.'s Professional Computer; Digital Equipment Corp.'s Rainbow 100; Bytec Management Corp.'s Hyperion; Grid Systems Corp.'s Compass; and Compaq Computer Corp.'s Compaq.

"We would like to become preeminent in the software industry. But we have to demonstrate — to ourselves, to the financial community and to users — that Lotus is here to stay," Kapor told the members of the press who gathered for the announcement at the Pierre Hotel here. He went on to say that the company, which turned a $14.3 million profit last year, was threatened not by "a mythical software shakeout," but by the challenge of marketing its own new products.

As an introductory offer, owners or new purchasers of Lotus 1-2-3 can buy Symphony for an additional $200. David McElfresh, vice-president of product development for Lotus, said the offer, due to run for three to six months, was designed to provide "an easy path" for upgrading to the higher priced product and "to protect our user base." Lotus is at 161 First St., Cambridge, Mass. 02142.

'Symphony' gets hesitant bravos

NEW YORK — Users gathered at the Pierre Hotel here last week to hear Lotus Development Corp. announce its Symphony integrated software package were excited about the product, but they suggested that Lotus 1-2-3 devotees may not yet be ready for it.

Frank Tanzillo, business systems analyst at Corning Glass Works, said Symphony is "beyond the leading edge" of most users' technical accomplishments. "It's easily the most powerful thing out there, but it will be a while before people are ready to take full advantage of it," Tanzillo said.

But software specialist Esther Dyson, president of Rosen Research Co., said users would not be dissuaded from buying Symphony even if they have yet to exhaust 1-2-3's capabilities. "You don't have 1-2-3 and then have Symphony for dessert," she said, noting that the five-function tool will appeal to a broader market.

Even so, James I. Magid, an electronic connector industry analyst at L.F. Rothschild, Unterberg, Towbin, said the WP or communications functions alone would convince many users to pay Lotus for the new product.

Dyson said that Symphony's $200 introductory price for 1-2-3 users would allow the new software product to ride the coattails of the hot-selling package. She added that Lotus does not "want to cannibalize" the market for 1-2-3 and so is giving users an incentive to buy both products.

Appeals court calls moonlighting on system criminal

By James Connolly
CW Staff

INDIANAPOLIS — Using an employer's computer for moonlighting is just as much of a crime as the surreptitious tapping of telephone, power or CATV lines, an Indiana appeals court has ruled.

The three-judge Second District Court of Appeals late last month reinstated the theft convictions of a former computer programmer for the Indianapolis Department of Planning and Zoning. The court said that Michael McGraw must face sentencing for using the city's IBM 3031 computer in connection with his second job, selling a franchised diet product called Nature Slim.

McGraw faces a maximum penalty of four years' imprisonment and a $10,000 fine.

The appeals court ruling, which defense attorney Phillip Melangton has asked the court to reconsider, reversed a Marion County Superior Court judge's override of a jury verdict of guilty on two theft counts. That judge said Indiana's theft law wasn't specific enough to cover the theft of computer time.

McGraw's attorney had likened McGraw's actions to a worker "using the office xerox machine to copy a recipe for his wife." He said there were only 35 pages of Nature Slim-related work — such as client lists and form letters — in the 1,100-page printout of McGraw's computer library.

But County Deputy Prosecuting Attorney James Warden appealed to the higher court, which ruled that "computer services, leased or owned, are a part of our market economy in large dollar amounts. Computer time is a service for which money is paid . . . thus it is property."

Now involved in computer sales, McGraw was fired by the city in 1981 for failing to complete his work, apparently because he was working on his second job on city time, according to Warden.

VDT operators report 'adverse' pregnancies

By David Myers
CW New York Bureau

NEW YORK — The National Association of Working Women, 9 to 5, said here last week that it has uncovered a work site where 50% of the pregnancies of VDT operators ended "adversely" over a four-year period.

United Airlines' telephone reservations office in San Francisco was named as the site where the pregnancies of 48 VDT operators ended in 15 miscarriages, one stillbirth, one death of a newborn infant, two children born with birth defects, two premature deliveries and three other undisclosed "problems" between 1979 and this year.

"We're not pointing the finger only at [VDT] manufacturers," Karen Nussbaum, executive director of the Boston-based labor organization, said at a news conference here last Thursday. She admitted 9 to 5 had not identified the cause of the pregnancy problems and was unable to give the name of the manufacturer of the terminals at the United reservations office.

Nussbaum said 9 to 5 has asked the National Institute of Occupational Safety and Health to investigate the United work site.

A spokesman for United Airlines in Chicago cited studies by the Center for Disease Control and the National Academy of Sciences finding "no evidence that radiation emitted [by VDTs] reaches or exceeds any international standard of safety and health." Noting the "vast majority" of VDT operators are women of reproductive age, the spokesman said that "clusters of problem pregnancies will occur by statistical chance alone" and are unrelated to VDT use.

Dr. Jeanne M. Stellman, a Columbia University public health school professor brought to last week's news conference by 9 to 5, agreed there is "no proven link" between VDT radiation and health problems. She went on to note that there is also "no evidence of widespread birth defects" among VDT operators.

Nevertheless, Stellman maintained that the U.S. trails the "rest of the world in providing health protection for VDT workers."

Nussbaum acknowledged that the stress caused by VDT work could be relieved by "painfully simple solutions" undertaken by employers without VDT design or manufacturing changes. However, she said that 9 to 5 is "calling for new standards for manufacturers," including metal shielding for terminals.

The labor group leader said 60% of the terminals manufactured in the U.S. do not meet international safety standards. Bringing the rest "up to snuff" would be "cheap in comparison to the human costs."

The association also released results of a voluntary survey of 571 of the nation's 10 million VDT operators, showing that over half experience eye or muscle strain and 45% reported pregnancies ending in miscarriage, abortion, stillbirth, early death of the infant, premature delivery or major birth defects.

At the same time, 48% of those responding to 9 to 5's questionnaire said their health was "about the same," while 38% described theirs as "slightly worse" and 10.9% as "much worse."

Codex to OEM Ungermann-Bass local network

MANSFIELD, Mass. — Codex Corp., a manufacturer of modems and multiplexers, moved to diversify its product line last week by introducing a local-area network that is being supplied to the company by Ungermann-Bass, Inc. under a five-year agreement.

Under terms of that agreement, Codex will market, install and maintain Ungermann-Bass' Net/One local network under its own name. It will be the first member of a family of new networking products called the Codex 4000 series. Ungermann-Bass will also continue to market Net/One.

Adopting an unusual tactic in the marketing of local-area networks, Codex will offer one- to five-year lease options for network hardware and software components.

Like Ungermann-Bass' Net/One, the Codex local network will be available in either broadband or baseband versions or in a hybrid version, where baseband "feeder" networks can be interconnected with a high-capacity broadband backbone network. Other support options available from Codex for the network include initial site survey and the design and installation of the cable plant.

Codex reported that a typical local net configuration would cost between $450 and $750 per port.

Codex is located at 20 Cabot Blvd., Mansfield, Mass. 02048.

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Strict testing the vendors' aim

Many of the companies that submit their microcomputer software products to the International Bureau of Software Test (IBST) are not seeking that company's seal of approval.

Those software manufacturers, according to IBST President William Goss, simply want their products to undergo strict, out-of-house testing that may reveal problems their own quality assurance experts may have missed. In addition to testing, IBST will build test data sets that its clients, which include Digital Research, Inc. and Verbatim Corp., can utilize repeatedly.

"We relieve their designers of test work and allow them to focus on developing new products," Goss said. "Also, our thorough testing can save a software manufacturer quite a lot of money because we catch problems that would otherwise have to be fixed in the field."

IBST charges between $5,000 and $25,000 to test a microcomputer software package. Some tests run as high as $100,000, depending on the number of functions incorporated in the package.

Relatively cheap

In comparison, the certification processes offered by Peripheral Vision Co. and Benchmark Computer Systems, Inc. are relatively cheap. Both firms charge between $400 and $2,000 to test and approve most micro packages.

Peripheral Vision President Philip Raymond guarantees a four-week turnaround time for certification. Benchmark claimed an average three-week turnaround record, and IBST said its seal of approval testing process takes anywhere from four to 10 weeks, depending on the sophistication of the micro package.

"Narrow-scope programs are easy to test," Goss said. "But a micro operating system or a multifunction application takes considerably longer to review because there are many more interrelationships to study."

One of the most common problems IBST encounters with micro packages is poorly written documentation, a flaw that Raymond and Ken Thoreson of Benchmark also highlighted.

"First, we take the package's documentation and grade it, just like in school," Thoreson said. "Then we match the documentation to the operation of the software itself to see how useful the manuals are to the user. Many times the documentation is so poorly written it's useless."

SEALS from page 1

ware testing and approval, according to Vice-President Ken Thoreson. The Minnesota firm, an established retailer of turnkey financial systems, will not only grant its Benchmark Seal of Approval, but will publish and market a package for its developer.

"There are a lot of people out there buying micro software," Thoreson said. "But a lot of that software is developed by loners and entrepreneurs who often don't utilize the most stringent testing methods. That can be very frustrating and costly for the user.

"We can ensure that the package you're buying is a quality product. That's where the UL and *Good Housekeeping* comparison comes in."

Both Peripheral Vision and IBST offer testing for minicomputer software, but Raymond and Goss said demand for that service has not yet developed. All three executives admit that marketing their approval is the biggest obstacle.

Carrier promises reduced telex rates

NEW YORK — Rates "up to 60% below those charged by traditional telex services" were promised earlier this month by International Record Carrier, Inc. when it began marketing its Supertelex service in the U.S.

A telex transmission between the U.S. and the UK, Hong Kong or Israel costs 75 cents per minute, said International Record Carrier President James McKenna. To continental Europe, the per-minute price is 95 cents; to anywhere else, it is $1.85.

All International Record Carrier telex traffic goes directly from the U.S. customer's terminal to a computerized switch in London. It is forwarded to other countries from there if necessary.

The terminal-computer hookup is provided by GTE Telenet Communications Corp.'s packet-switched network at no additional charge to the customer. This arrangement eliminates the delays inherent in competing services, which accumulate outbound international telex traffic at store-and-forward switches in New York, Miami and other U.S. gateways before transmitting it overseas, McKenna explained.

International Record Carrier traffic is transmitted to London at approximately 1,200 bit/sec, considerably faster than traditional telex service, he added.

McKenna reported that his company has developed a software package which "bypasses the complicated accessing procedures of other telex services as well as eliminates the need for a specially trained telex operator."

Stored on a floppy diskette, the software is compatible with microprocessors from 28 different manufacturers, including Apple Computer, Inc., IBM and Wang Laboratories, Inc. International Record Carrier will provide compatible micros to customers without them on a free, trial basis, according to McKenna.

International Record Carrier is a subsidiary of Consortium Holdings Ltd., headquartered in Israel, which already markets Supertelex service in that country, throughout Western Europe and in Hong Kong."

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Afcom predicts 7% rise in '84 DP operations salaries

By Patricia Keefe
CW Staff

GARDEN GROVE, Calif. — The salaries of computer operations personnel are expected to rise an average of 7% this year, with a high of 7.8% for data entry managers and a low of 6.2% for key-to-disk operators, the Association for Computer Operations Managers (Afcom) predicted in its annual salary survey.

Undermining this rosy prediction, however, was Afcom's note that the average rise in salaries during 1983 was only 3.8%, considerably less than the anticipated 7.5%. "This is a much smaller increase than was experienced [in 1983], but given the lowest inflation rate in many years, it is not inconsistent with the general economy," the survey said.

The survey, which covered 250 sites, serves as a guide to salaries currently being paid to employees at various levels within the data entry, data control and computer operations departments of the data center. It claims to be one of the few such surveys to make a distinction between the computer operations manager and the DP operations manager.

Afcom defines DP operations managers as "those who are in charge of computer operations, data entry and data control," whereas computer operations managers are responsible only for the computer room. Using Afcom's definition, there are some small shops that call their DP managers computer operations manager. "Surveys that do not make this distinction severely underestimate the highest operations management salaries and, in effect, perform a great disservice to operations," Afcom said.

Anticipated increases for management personnel led the way, as they did last year, with an average of 7.5%. Other departments followed that high with estimated 7.1% increases for both computer and data processing operations, 7% for data control and 6.9% for data entry.

Actual 1983 increases

In 1983, computer operations, by department, led the way in salary gains with an average increase of 3.5%, Afcom said. Data entry salaries rose 3.5%; bringing up the rear was data control, where overall salaries rose a miniscule .8%.

The position that showed the single largest average increase last year was DP operations scheduler, whose salary jumped 12%. Next was computer operations managers, whose salaries rose 11.3%.

On a national basis, DP operations managers earned an average annual salary of $36,180 last year, earning 20% more a year than their counterparts in computer operations.

In large installations (those spending more than $150,000 in equivalent monthly equipment rental costs), the DP operations manager is earning $42,080, and the computer operations manager is earning $34,284. In smaller centers (under $50,000 in equivalent monthly equipment rental costs), the DP operations manager averages $31,220 a year, and the computer operations manager averages $26,556.

The survey also delved into recruitment problems. The heaviest recruitment efforts targeted the computer room, where survey respondents said they encountered the most difficulty in finding qualified and experienced candidates. For example, 50% of the respondents experienced difficulty in locating qualified computer operators, while 30% found it "very difficult, if not impossible," to find qualified DP operations managers.

Conversely, there was no shortage of computer operator trainees.

Copies of the survey are available for $10. Afcom can be reached through Data Center Management Services, Suite 201, 11501 Brookhurst, Garden Grove, Calif. 92640.

Sting nets five alleged smugglers

MARLBORO, N.J. — U.S. Customs Service agents last week charged five people, including a Chinese citizen and an AT&T Information Systems, Inc. engineer, with plotting to smuggle high-tech equipment to China.

The five, arrested after what prosecutors claimed was one of a series of meetings with an undercover customs agent, allegedly tried to buy 100 transverse-wave tube amplifiers from the agent, who was running a "sting" operation.

Held in lieu of bails ranging from $250,000 to $1.5 million, the five were charged with conspiracy to export munitions illegally — specifically, $1 million worth of Watkins-Johnson Co. amplifiers, which allegedly can be used for missile-guidance systems and for jamming radar. Assistant U.S. Attorney Andrew Ruotolo Jr. told a federal magistrate that the suspects gave the agent a "shopping list" of items that they wanted to buy and told the agent they had smuggled other goods to China.

Ruotolo said the lists included various types of computer equipment and military night scopes.

The AT&T Information Systems employee was identified as Kuang-Shin Lin of Lincroft, N.J., a naturalized American citizen. Ruotolo said Lin didn't use his AT&T position in connection with the conspiracy.

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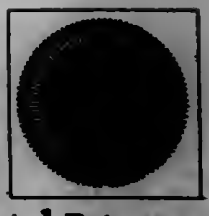

Dataproducts Daisywheel Printers

DP crime bills sitting on congressional back burner

By John Gallant
CW Staff

WASHINGTON, D.C. — Pending federal computer crime legislation is wintering in subcommittee this year, languishing on the congressional back burner while foreign policy and budget issues hold sway.

Four major DP crime bills are still awaiting action in the House of Representatives' Judiciary Subcommittee on Civil and Constitutional Rights, which is chaired by Rep. Don Edwards (D-Calif.). While Edwards said at November hearings that the subcommittee would move promptly to determine if there is a need for a federal computer crime law [CW, Nov. 28], three months later no further hearings or subcommittee action is scheduled.

According to a subcommittee staff member, Edwards is still awaiting the U.S. Justice Department's recommendation on the need for legislation before moving on bills introduced by Reps. Bill Nelson (D-Fla.), Daniel A. Mica (D-Fla.) and Lawrence Coughlin (R-Pa.). The staffer said the Justice Department promised a recommendation at the subcommittee's Nov. 18 hearings, but was delayed by the recent resignation of Attorney General William French Smith.

The fifth DP crime bill, introduced by Rep. William J. Hughes (D-N.J.), is still on hold in the House Judiciary Subcommittee on Crime. A staff member said the subcommittee, chaired by Hughes, anticipates at least one additional day of hearings on the bill, which deals primarily with credit card fraud. Though not yet formally scheduled, those hearings are expected in March.

In the Senate, no action has yet been scheduled on a federal crime bill filed last August by Sen. Paul Trible (R-Va.). That legislation — the Senate version of Rep. Nelson's DP crime bill — is still awaiting initial hearings in the Senate Judiciary Subcommittee on Criminal Law.

Hearings on the Senate version of the Small Business Computer Crime Prevention Act, approved by the House in October [CW, Oct. 31], are slated to begin March 7 before the Committee on Small Business. The bill, introduced by Sen. Paul Tsongas (D-Mass.), would set up a public and private-sector task force to investigate the problem of computer crime in small business and recommend preventative measures.

Earlier this month, the Computer Crime Prevention Act of 1984 was filed by Sen. William S. Cohen (R-Maine) in response to recent Senate hearings on computer hacker activities (see story below).

If no action is taken on the stalled crime bills by Congress' scheduled Oct. 4 adjournment, the bills' sponsors will have to decide whether to reintroduce the bills in the next session.

Nelson's Federal Computer Systems Protection Act of 1983 (H.R. 1092) would make computer crime a federal offense if it involved federal agencies, institutions insured by the U.S. government or computers that operate in interstate commerce. The bill, which currently has 116 cosponsors, calls for fines of $50,000, or up to twice the monetary gain from such a crime, and prison terms of up to five years.

H.R. 4259 and H.R. 4348, both introduced by Mica, would set up a clearinghouse on federal computer crime (see story on page 13) in addition to making it a federal offense to use a computer without authorization and with the intent to defraud or steal. The bill prescribes a fine of up to $50,000 and five years' imprisonment. H.R. 4259 also faces review by the House Ways and Means Committee because it incorporates an income tax credit for buyers of micros.

Rep. Coughlin's succinct three-paragraph H.R. 4301 would make the use of a computer in a manner not authorized by the owner a federal crime punishable by a fine of up to $100,000 and up to 10 years' imprisonment.

The DP crime portion of Rep. Hughes' H.R. 3570, designed to curb credit card fraud, would make the fraudulent use of a computer a federal offense punishable by a fine of up to $10,000 and a prison term of up to 10 years.

Bill targets unauthorized access

By John Kirchner
CW Washington Bureau

WASHINGTON, D.C. — A new computer crime bill, introduced recently in the U.S. Senate after hearings on rampant, illegal computer hacker activities, contains special provisions to deter unauthorized access of data bases.

The Computer Crime Prevention Act of 1984, proposed Feb. 8 by Sen. William S. Cohen (R-Maine), contains specific penalties for buying,

See CRIME page 13

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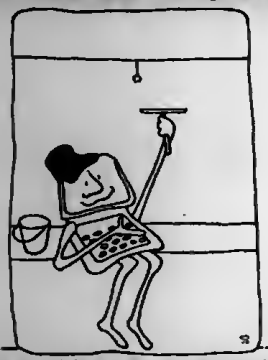

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CRIME from page 12

procuring or selling the passwords to the computers covered in the legislation in order to obtain money or services illegally. The penalties for this offense would be $50,000 or three times the amount obtained and/or a maximum prison sentence of five years.

To deter computer hackers, penalties for any unauthorized access not involving fraud or damage would be up to $5,000 and one year in jail. These would be levied only against "intentional hackers." It would "not penalize computer enthusiasts who accidentally tap into the computer systems," Cohen said.

Like other computer crime bills now under consideration in Congress, the proposed law covers computers owned or operated by the federal government and federally insured financial institutions and any system used in interstate commerce. Fines for illegally using computers for fraud, damaging computers or altering their content would be $50,000 or three times the amount of any money obtained and up to five years in prison.

Cohen noted that his Subcommittee on Oversight of Government Management held two days of hearings on hacking and computer crime last October. "Those hearings vividly illustrated that computer break-ins should not be treated as simply innocent pranks by curious youngsters," he said.

Computer crime clearinghouse proposed

A clearinghouse to identify "vulnerabilities and threats to federal computer systems" has been proposed in legislation filed by Rep. Daniel A. Mica (D-Fla.) to combat what he called the "dangerous mismanagement of federal computer resources."

Dubbed the Interagency Committee on Computer Crime and Abuse, the clearinghouse would compile and disseminate information and statistics on the incidence of computer fraud and abuse.

The clearinghouse idea was incorporated in two DP crime bills introduced by Mica last year. The bills — H.R. 4259 and H.R. 4384 — currently are awaiting action in the House, where they received only limited attention in the previous session of Congress.

The bills call for the clearinghouse to be established within the executive branch of the federal government and to be chaired by the attorney general. The interagency committee would also have as members the secretaries of commerce, defense and the treasury, the chairman of the Federal Communications Commission and the director of the Federal Bureau of Investigation.

Would also coordinate research

Aside from its responsibilities as a computer crime information clearinghouse for federal departments and agencies, the interagency committee would also be charged with coordinating research relating to "the development of more secure computer systems." In that function, it would make recommendations to governmental agencies for improving the security of federal computer systems.

But perhaps its most important role would be that of making recommendations to Congress "for such legislative changes as the committee determines to be desirable in order to protect computer systems from fraud and abuse." In that role, Mica told recent hearings of the House Subcommittee on Civil and Constitutional Rights, the clearinghouse could effectively aid Congress in combating computer crime.

In addition to the proposed clearinghouse, Mica's pending legislation calls for the creation of a Computer Security Research Program. Administered by the secretary of commerce, the program would provide funding to individuals for research and development in new methods of protecting computer systems from unauthorized access and use.

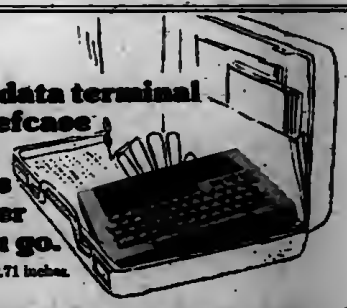
NCR Users Conference set for April 29-May 2

CINCINNATI — The Federation of NCR User Groups will hold the 14th annual NCR Users Conference (Nucon) at the Cincinnati Convention Center here April 29 to May 2.

The conference will include more than 60 educational sessions, including presentations on hardware, operating software, software tools, application software management techniques and communications. Also included will be an address by C.E. Exley Jr., NCR Corp.'s president and chief executive officer.

The conference fee is $365 for participants who register prior to March 16; after that date the fee is $395.

Further information is available from the Federation of NCR User Groups, Mail Station SDC-2, Dayton, Ohio 45479.



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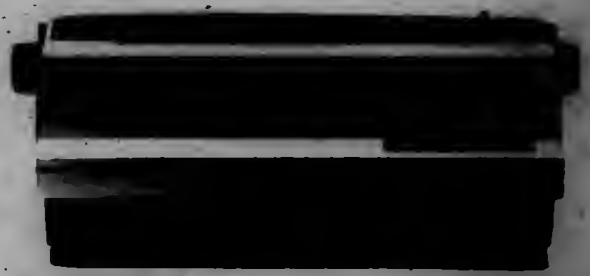

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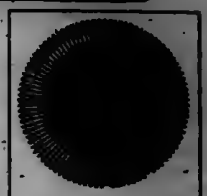

Dataproducts Daisywheel Printers

Decision on higher Ecom rates due Friday

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — The U.S. Postal Service's much-maligned Electronic Computer-Originated Mail (Ecom) service may get a new lease on life this Friday, when the U.S. Postal Rate Commission is scheduled to act on a proposal for higher rates.

The proposal, submitted 10 months ago, would raise the price of a one-page Ecom message from 26 to 31 cents; a two-page message, now priced at 31 cents, would rise to 40 cents. If the new rates are adopted, according to Karen Uemoto, Ecom's director, the service will "begin to break even late next year or early in 1986," and by late 1987 there will be enough of a surplus to repay all of Ecom's accumulated deficit, which currently totals more than $35 million.

However, not everyone agrees with Uemoto's rosy forecast. Critics include the U.S. Department of Justice and Rep. Glenn English (D-Okla.), chairman of a House of Representatives government operations subcommittee, as well as vendors of competing private electronic mail services.

When Ecom began service in January 1982, postal officials predicted it would handle at least 50 million messages during fiscal year 1983, which ended Sept. 30. The actual volume was 15.3 million messages.

Last December, *The Washington Post* reported that one customer, Automotive Incentive Development Co., accounted for 50% to 75% of Ecom's total volume. The company's president, James Young, was quoted as saying that if the proposed rate increase is implemented, he will stop using Ecom service.

In addition, Ecom's managers have been accused of exceeding their authority by unilaterally modifying the service. As originally conceived, Ecom was to be a "generation II" electronic mail offering. Messages would be transmitted on-line from the sender's site to a serving post office (SPO) near the recipient; each message would be printed at the latter point, placed in an envelope and delivered by a letter carrier on his regular rounds. The whole trip, from sender to receiver, was supposed to take a maximum of two days.

But the Postal Service has admitted that a significant percentage of Ecom messages have not been transmitted to the "addressee SPO" for some time. Instead, these messages are transmitted by the sender only to his local post office, where they are printed out, placed in envelopes and forwarded to the recipient as ordinary airmail.

About 50% of Ecom messages are handled in this way, according to a statement published by the Postal Service last April in the *Federal Register*. However, Ecom director Uemoto last week estimated that figure at between 30% and 35% of the total amount of Ecom messages.

Cost advantage

The major advantage of this arrangement for the customer is that it saves the cost of transmission to the addressee's post office, typically amounting to about $1 per message. The local post office transports the message, after printing and enveloping it at the sender's end, and the total charge to the sender for printing, enveloping and transport is 26 cents or 31 cents, depending on the number of pages.

Consultant Mike Cavanagh, who is probably Ecom's most vocal critic, contended that this modification of the original Ecom service demonstrates what is wrong with the whole concept. His basic point is that the only market for Ecom is "junk mailers" needing a cheap, quick distribution system. Since there are not enough such mailers to make the service viable, the Postal Service has simply modified Ecom to make it even cheaper.

"But there just aren't enough customers out there even at the lower price," Cavanagh argued, "so the Postal Service's other patrons have to make up the difference between what Ecom takes in and pays out. In effect, they're paying a steadily mounting subsidy to support a handful of junk mailers."

Although Cavanagh and his fellow critics have attracted a lot of press and public support for the idea that Ecom lacks any redeeming virtue, there is at least one other view.

According to that view, the bulk of the Postal Service's revenue comes from first-class mail; business-related letters supply the bulk of that revenue, and a rapidly growing profusion of on-line terminals threatens to reduce that revenue stream significantly.

A related argument is that, like the local telephone company, the local post office performs a unique and valuable public service; therefore, if it is desirable to subsidize the local telephone company so it can retain business customers, it is equally desirable to subsidize the post office so it can do likewise.

Critics of that argument, however, point out that unlike the local telephone company, Ecom is not a successful business venture.

The upcoming report of the Postal Rate Commission will significantly impact Ecom's future. Besides the rate increase proposal, the commission will also consider whether to let Ecom users, for an additional four cents, send a business reply envelope along with a message and whether to let users send any number of messages at one time (they must currently send at least 200).

If either of these latter changes is approved, it will mark the first time a major modification of Ecom's original design has been officially endorsed.

MCI announces service to compete with Ecom

WASHINGTON, D.C. — "We're in the same market arena" as the U.S. Postal Service's Electronic Computer-Originated Mail (Ecom), "but we're offering much more," a spokesman for MCI Digital Information Services Corp. said last week after the company unveiled MCI Volume Mail, a second-generation electronic message service that works much like Ecom.

In both services, the user transmits multiple messages to a receiving center, where they are printed, enveloped and then delivered by the Postal Service as ordinary first-class mail.

MCI charges 70 cents to $1 for a one-page letter, depending on volume and job requirements. This is roughly what Ecom costs. But while Ecom requires users to send at least 200 messages at a time, MCI Volume Mail customers can send any number of messages.

In addition, the MCI service allows business reply envelopes or other inserts to be sent along with the message, accepts a wide variety of message formats, reproduces company logos and features a simple sign-up procedure.

The U.S. Postal Service is currently seeking authority to provide a business reply envelope as part of Ecom and to do away with the 200-message minimum.

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Ways to bypass the phone net on the rise

PRODUCT SPOTLIGHT

By Phil Hirsch
CW Washington Bureau

One of the nation's more extensive bypass networks was put into operation last year by Citicorp, the New York-based banking giant. The network links 10 sites — three on the East Coast, two on the West Coast and most of the others in the Midwest — allowing them to communicate with each other via 56K bit/sec digital circuits.

At the other end of the bypass spectrum is a 1.544M bit/sec digital microwave channel that a company is using to connect two buildings across the street from each other. This system, according to a spokesman for M/A-COM, Inc., a leading manufacturer of private microwave equipment, costs about $20,000.

Citicorp, by comparison, is paying $24 million annually just to lease the satellite channels connecting its 10 earth stations. Each of the stations cost another $1 million.

But in both cases, the motivation is the same — to reduce communication costs below what the wire-line carriers (telephone companies that own transmission facilities) are charging for equivalent transmission capacity and/or to obtain service features not available from the carriers.

How many companies today are using services that bypass the telephone network? Because the figures come from biased sources — bypass vendors and telephone carriers — it is impossible to know accurately. The Federal Communications Commission is expected to issue a detailed analysis within the next month or so, although the commission is not universally considered unbiased.

However, it seems certain that bypassing will increase, both in terms of increasing revenues and in terms of a broadening of the types of users involved. Higher tariffs are a major reason. AT&T's proposed rates for private-line service, filed last October and now scheduled to become effective April 8, call for a 15.7% overall increase in interlocal access and transport area private-line rates. Because of the FCC's recently amended access surcharge plan [CW, Jan. 30], this percentage is expected to increase.

Conflicting definitions

One difficulty of discussing bypass is that conflicting definitions of the term exist. It may mean going around the local-exchange network or going around the long-distance network — or both.

Add while some observers talk about bypass in terms of customers and/or traffic, others are concerned about costs and revenue. This semantic confusion creates problems because if a bypass facility is defined as one that provides communications more cost-effectively between and among points normally served by the analog telephone network, then the biggest providers of bypass facilities are the telephone companies themselves.

AT&T is laying fiber-optic cables down the East and West Coasts, as well as elsewhere, which will interconnect several of the nation's largest cities. Meanwhile, many former Bell operating companies are installing local as well as long-distance fiber-optic channels.

The Pacific Telesis Group (Pactel) has laid three fiber-optic loops in downtown San Francisco that can put 90M bit/sec of digital transmission capacity on the doorsteps of nearby companies. In addition, Pactel has just about completed a fiber-optic network in the Los Angeles area that will interconnect the sites of the 1984 Olympics, which are scattered over an area stretching 90 miles north, 30 miles east and 110 miles south of the city. By 1986, the company expects to have all of California's major cities connected by fiber-optic cable.

Meanwhile, it has requested FCC permission to offer digital termination systems in 19 California and Nevada cities and is installing fiber subscriber loop carrier systems in several areas, which would replace much of the existing residential and business customers' analog local loop with a fiber-optic cable that carries 24 digitized voice signals totaling 1.5M bit/sec.

Pac. tel also has proposed constructing a CATV system to serve Palo Alto, Calif., and several surrounding communities. Part of the system's capacity would be reserved for data transmission at all popular speeds.

Private microwave

A "key alternative" to these telephone company-provided facilities, according to a recent report published by the market research firm International Data Corp. (IDC), is private microwave. "Given the demand in the 1980s for multifaceted data/voice services," IDC said, "we expect to see major growth in . . . microwave-based private communication networks."

Part of this growth will be produced by digital termination systems vendors. A digital termination systems network basically consists of a centrally located microwave transceiver which communicates with users up to about eight miles away through three or four microwave antennas, each serving a different sector of the surrounding area. Users within each sector share a 1.5M bit/sec, digital, full-duplex channel. Because transmission capacity is limited, digital termination systems are generally considered feasible for interactive rather than batch-type data communications and are not suited, at least presently, for voice traffic.

More than 50 companies have requested FCC permission to build and operate digital termination systems, and such systems have been authorized for most of the nation's major cities. Although only a few are actually on the air at the moment, several are scheduled to begin operation this year, so these new bypass facilities should become accessible to a substantial percentage of the nation's corporate communications users by the end of 1984.

See BYPASS page 16

How to Bypass Your Local Telephone Company

Major sources	Types of facilities offered	Comments
AT&T, the former Bell operating companies, independent telephone operating companies and other common carriers	The former Bell operating companies offer long-distance access (toll exchange network bypass) using terrestrial analog/digital transmission facilities. Connections link user with AT&T, other common carrier network nodes or with user's private local/long-distance network. AT&T and other common carriers offer inter-Lata (local access and transport areas) satellite, terrestrial private-line facilities. The former Bell operating companies offer intra-Lata private-line facilities. Two telephone companies (Rochester Telephone and Southern New England Telephone) are building multistate private-line networks.	All carriers making increased use of fiber-optic cable for local long-distance transmission. Many former Bell operating companies planning to introduce local-area data transport services, circuit-switched digital capabilities, local-area networks this year; they may be authorized to offer digital termination systems (DTS). Some former Bell operating companies are planning to build cable TV networks providing private-line services. The former Bell operating companies are also likely to build office parks offering other tenants teleport and/or shared access to terrestrial networks.
Multitenant services vendors (owners of office buildings and office/industrial parks who provide communications services to their tenants)	Long-distance access using private lines typically leased from phone company. Ancillary services — electronic mail, private branch exchange and message centers — are also frequently available.	Shared communications services are now offered by 98 office buildings concentrated in New York City, Dallas and Chicago. Telephone companies and other common carriers are investing in real estate-related communications ventures. Video teleconferencing to be offered this year by at least one multitenant services vendor.
DTS/Domsat suppliers (DTS provide data-only services within metropolitan areas; digital electronic message services are DTS networks interconnected by satellite/terrestrial facilities leased from others.)	Point-to-point, point-to-multipoint, microwave-based transmission at speeds of 9.6K bit/sec to 1.5M bit/sec.	Only one DTS carrier is operating at the moment. Several plan to be on the air by the end of this year; however, their networking capability will be limited. New technology and the opening of 18-GHz frequency band promise to increase DTS transmission capacity.
Teleports (Some are primarily office/industrial park real estate ventures which include access to co-grandsee satellite earth stations. Others are "antenna farms" providing only satellite-based communications service.)	Long-distance bypass for voice/data communications. Some teleports also bypass local exchange networks.	New York City teleport, first of its kind, scheduled to begin operation late this year. At least two more (Bay Area Teleport in San Francisco and Los Colinas office park between Dallas and Fort Worth) are likely to be operational in 1985. According to one estimate, within three years teleport-equipped office/industrial parks are likely to be operating in the nation's 30 largest metropolitan areas. "Antenna farm" teleports are now operating in about 25 cities.
Cable TV networks	Coax/fiber-optic-based private-line services connecting user on point-to-multipoint basis with local sites and/or with long-distance network nodes.	Cable TV-based private-line services are now offered in a number of cities — notably, New York, Pittsburgh and Omaha. They are planned in several more, but local telephone companies are insisting that the companies must first be certified by state public utilities commissions. The Federal Communications Commission has been asked to assert federal jurisdiction.
Private network vendors	Primarily microwave (including DTS) providing point-to-point, point-to-multipoint transmission at all popular bit rates.	Business use of microwave to bypass local exchange networks is increasing. Most new systems operate in the 18- or 23-GHz range. Transmission up to 8 miles without regeneration is possible.

NEWS

WASHINGTON UPDATE

JAKE KIRCHNER

Japan will reconsider trade proposals: U.S.

WASHINGTON, D.C. — U.S. government officials said recently they believe Japan will reconsider several controversial high-technology trade proposals that have raised serious concern among American firms.

Chief among the U.S. complaints is a Japanese proposal to create a patent-like protection mechanism for software, allowing for only 16 years of protection and including compulsory licensing to the end user. American industry claims the proposal would allow Japan to raid U.S. software to help it catch up in this important high-technology field.

The other area of concern is a proposal to limit foreign ownership of a certain type of telecommunications network the Japanese government may try to foster in that country.

Both proposals are in the early stages, and U.S. trade officials told U.S. industry leaders recently that Japan has agreed to consider American views as the proposals are developed. U.S. computer and electronics industry representatives who met with U.S. Commerce Secretary Malcolm Baldridge and U.S. Trade Representative William Brock reported the government has assured them of strong support in the controversy.

CAB orders regulations on reservations nets

WASHINGTON, D.C. — The Civil Aeronautics Board (CAB) has directed its staff to prepare regulations to minimize bias in the computerized airline reservations systems provided by airlines to travel agents.

The CAB decision is the latest move in the agency's investigation of complaints that some of the systems, provided by a small number of airlines, are biased in favor of the providers' own flight schedules, to the detriment of carriers who rent time on the systems.

Although there are several systems providers, most travel agents use the systems developed by United Airlines and American Airlines.

Independent studies by the CAB and the Justice Department found a potential for major abuses with anti-competitive consequences in current systems operations.

The CAB rejected suggestions from some airlines that these systems operations be divested.

The regulations being developed by the CAB staff reportedly will include provisions to ensure all airlines' schedules on a system are listed without preference to any carrier and that participation fees charged by the system providers to other airlines are not excessive.

Group plans ad campaign on VDT safety, tech issues

WASHINGTON, D.C. — A newly formed Coalition on Workplace Technology is planning a major advertising campaign on ergonomic and safety issues in support of increased use of office technologies.

The coalition, initially concentrating on VDT safety, was formed in response to concerns that new technology is not put to its best use in the work place, according to the Computer and Business Equipment Manufacturers Association (Cbema), a major force behind the coalition. The coalition will also target what it terms "unnecessary" legislation now appearing at the state level to regulate implementation and use of computer-based office equipment, particularly VDTs, said Cbema spokeswoman Charlotte LeGates.

Besides Cbema, other members of the coalition, representing manufacturers and users of high-technology equipment, include the Air Transport Association of America, the American Bankers Association, the American Electronics Association, the American Insurance Association, the American Newspaper Publishers Association, the American Society of Personnel Administration, the Electronic Industries Association and the Printing Industries of America.

LeGates said the number of prospective members is three times the number of groups that have already joined the coalition. She said the group's funding level "is very much up in the air," but that a "major advertising campaign" now under consideration would cost a minimum of $50,000.

In a statement issued last week, Cbema President Vico Henriques said, "We have a great deal of information about the best installation and use of visual displays, about how to introduce new technology in the work place and about the kinds of questions and problems that users experience."

BYPASS from page 15

According to Telestrategies, Inc., a McLean, Va., consulting firm that devotes most of its time to studying the bypass industry, digital termination systems networks in 45 cities will be operating by the end of this year. At least a few of the cities are also likely to be interconnected by then, so some users should be able to employ the new networks for long-distance as well as local communications.

Another significant source of bypass services is multitenant services vendors. A typical multitenant vendor is the owner of an office building or office park which leases communications circuits from a carrier and resells them to its tenants.

According to Jerry Lucas, president of Telestrategies, Inc., 58 office buildings around the country now provide such services. It is "virtually certain," he added, "that any office building of more than 300,000 square feet built in 1985 will provide shared communication services to its tenants."

Most offices with fewer than 200 employees can save six cents to 20 cents a minute per call by sharing long-distance service instead of dealing directly with the phone company, Lucas contended. And besides this direct saving, he pointed out, the sharer gains access to sophisticated private branch exchange equipment — offering electronic mail boxes, least cost routing and similar features — which the sharer often cannot justify on its own.

Although multitenant service vendors typically lease terrestrial circuits, they may also use satellite facilities. Late last year, for example, Olympia & York, the largest office developer in North America, announced plans to interconnect all of its properties, located in New York and eight other cities, using satellite channels supplied by United Telecommunications, Inc., a major independent telephone company.

Teleport services

A related form of bypass involves "teleports." The best known of these is being built jointly by New York, the regional port authority, Merrill Lynch & Co. and Western Union. Located on Staten Island, the teleport will provide access from a single location to 24 existing or planned domestic and several international satellite networks.

Some of the teleport's users will be located in an adjoining "corporate park"; others will be in neighboring areas of New York and New Jersey. Two similar teleports, consisting of earth stations and an adjacent office area, are also under construction.

One is in the San Francisco Bay area, the other near Dallas. The big advantage of the teleport-cum-office park is that it can largely eliminate the access circuitry — and its related costs — which existing carriers like Satellite Business Systems must add to their charges.

Telestrategies' Lucas expects teleports to be built in the nation's largest 30 cities within the next three years. He also expects "antenna farms" to be built in the largest five cities. Antenna farms, he explained, are satellite earth stations without office parks, connected by leased circuits to users scattered throughout a metropolitan area. Their operators would lease satellite transmission capacity at bulk rates and resell it in smaller pieces at rates less than those charged by other carriers.

Regulatory policies

Although the economics of bypass services will have an important bearing on their viability, regulatory policies will also play an important role.

For example, although a number of CATV companies now offer data transmission services and more plan to do so, they are being stymied by telephone companies' insistence that the CATV operators must first obtain common carrier licenses. According to a survey conducted last year by Time, Inc. and reported to the FCC, eight states — New Jersey, New Mexico, New York, Oregon, California, Colorado, Connecticut and Nebraska — are investigating this.

Meanwhile, legislation is pending in Congress to free cable-based private communication services from regulation, and the FCC is considering whether to preempt state regulatory authority over cable.

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End Users
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20 Finance/Insurance/Real Estate
30 Medicine/Law/Education
40 Wholesale/Retail Trade
50 Business Service (except DP)
60 Government—State/Federal/Local
65 Public Utility/Communication Systems/Transportation
70 Mining/Construction/Petroleum/Refining
75 Other User _____
Vendors
80 Manufacturer of Computers, Computer-related Systems or Peripherals
85 Computer Service Bureau/Software/Planning/Consulting
90 Computer/Peripheral Dealer/Distributor/Retailer
95 Other Vendor _____

2. OCCUPATION/FUNCTION (Circle One)
11 President/Owner/Partner/General Manager
12 VP/Assistant VP
13 Treasurer/Controller/Financial Officer
21 Director/Manager/Supervisor DP/MIS Services
22 Director/Manager of Operations/Planning/Administrative Services
23 Systems Manager/Systems Analyst
31 Manager/Supervisor Programming
32 Programmer/Methods Analyst
35 OA/WP Director/Manager/Supervisor
36 Data Comm Network/Systems Mgmt
41 Engr/Scientific/R&D/Tech Mgmt
51 Mfg Sales Reps/Sales/Marketing Mgmt
60 Consulting Mgmt
70 Medical/Legal/Accounting Mgmt
80 Educator/Journalist/Librarian/Student
90 Other _____

3. COMPUTER INVOLVEMENT (Circle all that apply)
Types of equipment with which you are personally involved either as user, vendor or consultant
A. Mainframes/Supermnis
B. Minicomputers/Small Business Computers
C. Microcomputers/Desktops
D. Communications Systems
E. Office Automation Systems

CW-138

IBM seen marketing micro with 'Trojan horse' strategy

By David Myers
CW New York Bureau

NEW YORK — With its antitrust worries safely behind it, IBM has developed a "Trojan horse strategy" for infiltrating American businesses with its Personal Computer and for taking over the entire hardware market through services delivered over its Information Network, The Yankee Group said at seminars held here and in San Francisco earlier this month.

IBM's aim is to "intoxicate and user with [the] limited processing power" of desktop Personal Computers, "creating an explosive demand" for storage media, software and processors, Dale Kutnick, executive director of the Boston-based consulting firm, told about 120 executives from user and vendor firms who attended the seminar here, titled "The IBM Impact."

"IBM has settled into its role as the standard-setter for the industry," Kutnick said. Before the U.S. Justice Department dropped its antitrust case against the company, "IBM was almost paranoid about competition and felt uncomfortable with third-party software developers."

But despite its clear aim to "dominate the industry," IBM is vulnerable in office automation, he contended. It lags behind its minicomputer-making rivals in developing a $35,000 to $40,000 system to act as what he called "a departmental file cabinet."

"There is a desperate need for this machine. Customers are looking for a system in the $20,000 range. They're still looking for that magic box," Kutnick said.

The rapid acceptance of the IBM Personal Computer, with 550,000 units shipped in 1983 and 1.5 million expected to be shipped in 1984, has obscured IBM's lack of a departmental-level office automation minicomputer, according to Kutnick.

Local-area net to debut?

Until IBM is able to design a 4900 family machine "small enough to fit onto the departmental level" — a process expected to take three years — it will pursue its strategy of dominance through networking, Kutnick told the seminar attendees.

Kutnick predicted that the company's local-area network will finally be announced in the second half of the year. A stopgap measure — a network designed for the Personal Computer — is likely to be made available at mid-year, the fruit of a joint development effort by IBM and Scitex, an Israeli firm.

"All the IBM local-area network will be is a local physical implementation" of Systems Network Architecture (SNA), Kutnick maintained. And it is through SNA and the SNA-based Information Network that IBM is plotting to conquer the computer industry, he added.

By year's end, IBM had captured a .9% share of the $4.23 billion computer services market, according to Yankee Group estimates.

Local net, 'Sierra' uniprocessor expected from IBM in '84

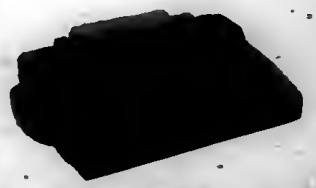
NEW YORK — Nothing as dramatic as the Personal Computer or the PCjr is expected from IBM this year, according to The Yankee Group.

Big Blue's major new product offerings this year will consist of the oft-predicted and oft-delayed local-area network as well as the project code-named Sierra, a high-end uniprocessor-based machine capable of obeying between 14 million instructions per second (Mips) and 19 Mips, Yankee Group researchers said.

The Boston-based consultants told attendees at seminars on "The IBM Impact," held here and in San Francisco earlier this month, to expect midyear, 15% price cuts on the 3061 and 3064 systems, along with higher maintenance costs on the 3033 family.

Other announcements said to be on the way include:

- Introduction late this year of a version of the Personal Computer, able to run subsets of System/36 operations.
- The unveiling of a Personal Computer with a built-in modem late this year or early next year.
- The release sometime this year of an MVS-like operating system to encourage IBM's 20,000 DOS users to sidle over to MVS.
- Availability late this year of a Systems Network Architecture support capability for the VM operating system.
- The marketing throughout the year of various enhancements to the Personal Computer, including a portable version, a different keyboard and a voice-input module.



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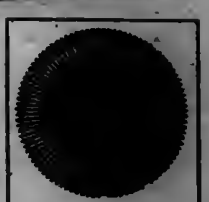

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SDC employee charged with bribe attempt

By Patricia Keefe
CW Staff

ALEXANDRIA, Va. — A federal grand jury here has indicted a contract employee of Systems Development Corp. (SDC) on charges that he attempted to bribe a consultant to a Massachusetts state agency in return for help in securing an estimated $3.4 million state contract.

The indictment, announced two weeks ago, also charges consultant M. James Errico with interstate travel in aid of racketeering and two counts of wire fraud. If convicted on all four counts, he could receive up to 25 years in jail and a $21,000 fine. Errico has entered a plea of not guilty. The case is scheduled to go to trial March 19.

Errico is under contract with SDC to serve as both consultant and director of marketing, according to Bernard Fried, vice-president, general counsel and secretary at SDC. He said that top management is currently reviewing the case and is expected to decide soon whether to terminate Errico's contract.

"Just because someone is indicted does not mean he is guilty," Fried pointed out.

Errico is accused of promising James R. Camicia, an industrial management consultant hired by the Massachusetts Welfare Department, with future consulting work with SDC in exchange for arranging to have the state contract awarded to the firm. The contract concerned development of a system called the Massachusetts Public Assistance Control System (Mpacs), which will be used to manage several major welfare programs.

The alleged bribery attempt failed, and the contract was awarded to an SDC competitor, Consultec Co., last June.

According to a Welfare Department spokeswoman, the bribery attempt was reported immediately to the Massachusetts attorney general, who turned the case over to federal authorities because "it involved facts beyond the jurisdiction of Massachusetts."

Medicaid contract threatened

A subsidiary of Burroughs Corp., SDC was awarded in 1982 an unrelated $40 million contract to automate Massachusetts' $1.2 billion Medicaid program. That contract has been plagued with delays, resulting in at least two warnings from state officials to shape up or lose the contract. Repercussions from Errico's indictment could jeopardize SDC's Medicaid contract, even though that contract is separate from the one involving Mpacs.

According to Welfare Commissioner Charles M. Atkins, if Errico is convicted, the state's contract with SDC has a provision allowing the state to terminate the Medicaid contract — something it has threatened to do twice now.

The first warning was in August in an attempt to get SDC to meet its deadline for getting the system online [CW, Aug. 22]; more recently, SDC was placed on notice that unless it reduces its backlog of processing claims to a 14-day waiting period by March 5, its contract will be canceled.

In response, SDC has filed a 25-page plan to resolve its problems, including an agreement to increase its staff. Nonetheless, Welfare Department officials have estimated the Medicaid management information system has saved the state $28 million since last September.

Groups granted DPMA charters

PARK RIDGE, Ill. — Two new special interest groups in the areas of education and software maintenance have been granted provisional charters by the Data Processing Management Association (DPMA).

The Special Interest Group for Education will seek to enhance communication between industry and education and promote further development of the DPMA model curriculum for computer-based information system education in colleges and universities.

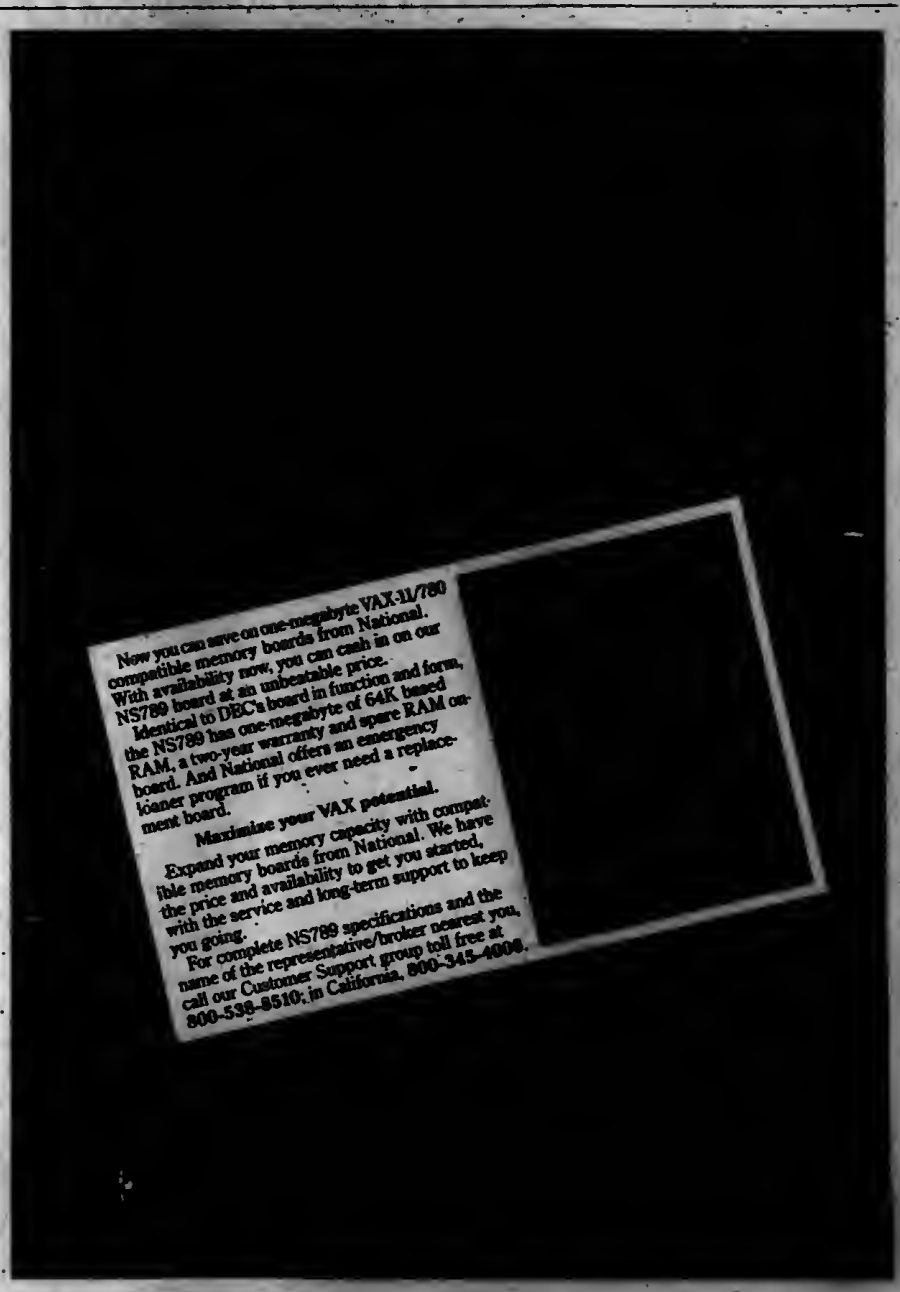
Officers of the group are Dr. Georgia B. Miller, president; Dr. Herbert Rebhun, vice-president; and Kathleen T. O'Neill, treasurer.

Membership information is available from Miller through Indiana University, P.O. Box 647, Indianapolis, Ind. 46223.

The Special Interest Group on Software Maintenance will deal with the problems of enhancement, modification, upgrading, adaptation, tuning and correction of existing software.

Group officers are Dr. Ned Chapin, president; Barbara J. Taute, vice-president; and Nicholas Zvegintzov, secretary/treasurer.

Membership information is available from Zvegintzov, No. 5F, 141 St. Mark's Place, Staten Island, N.Y. 10301.



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Telephone_____

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SPERRY

NEWS

Scofflaws nabbed at work by printout-wielding police

By James Connolly
CW Staff

INDIANAPOLIS — Armed with computer printouts, local police officers struck at banks, factories and other businesses earlier this month, rounding up hundreds of people wanted on traffic tickets and other misdemeanors.

The dragnet, coordinated through a pair of IBM 3031 mainframes, featured police arresting people at their places of work. The 165 well-publicized arrests in the first day of the program and more arrests in the days that followed inspired 2,500 other people to appear voluntarily in court to clear up outstanding warrants.

The 3031s combined information received from court and police data bases with information collected from another, unidentified source to determine up-to-date home and work addresses for 7,000 people wanted for misdemeanors.

"About nine months ago, we got together with the municipal courts and the prosecutors and found that we were successful in serving only one out of 25 warrants," said Indianapolis Police Department Lt. David Cupello. "Eighty to 90% of the time, the address on the face of the warrant was erroneous, and even where it was accurate, we had little chance of finding the people at home. So we started using various on-line systems to update the addresses."

To ease a backlog, officials offered a 50-day amnesty period under which 27,000 people named in outstanding Marion County misdemeanor and traffic warrants could surrender and pay their fines without risking imprisonment. Only 2,000 accepted the offer.

Meanwhile, the police and the court's 3031s, with software developed in-house, matched the names of wanted persons with places of employment and up-to-date addresses.

The source of that address information remains a secret. "We won't reveal it by agreement with those involved," said Cupello, who is also executive officer of the police department's data processing branch.

During the amnesty program, the police department mailed explanatory letters to 30 major employers to forward to workers who were believed to have outstanding warrants. Those letters warned the workers they were subject to arrest when the amnesty program expired on Feb. 1.

On that date, 25 two-officer teams hit the streets, armed with printouts with names and home and work addresses for 7,000 people. They rounded up 165 people that day.

Employers often let officers use personnel offices and summoned suspects there, rather than having employees handcuffed at their desks, according to Cupello.

With the publicity of the first arrests, 2,500 people voluntarily appeared in court within one week to pay fines or arrange for trials.

But all didn't run smoothly.

At least one of those arrested and booked under the glare of television news crews' lights was a woman who argued that she had already paid her speeding ticket. The woman is planning a lawsuit.

Municipal Court Judge Harold Kohlmeyer interceded and barred further arrests unless the warrants were double-checked with manual files in the courthouse.

Now the officers receive updated and confirmed printouts of 100 to 200 names a day and, before making arrests, radio their dispatcher to recheck the name on the dispatcher's IBM 3270 terminal. "We suffered a temporary setback, but now we are getting lists back from the court and have some of our teams back in action," Cupello said.

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NEWS

INTERNATIONAL REPORT

CW INTERNATIONAL NEWS NETWORK

AUSTRALIA

MELBOURNE — While Telecom Australia continues to debate whether to support a second standard on its proposed videotex service, Computer Power has unveiled a videotex service that will reportedly support both the UK's Prestel system and AT&T's North American Presentation Level Protocol Syntax on the same terminal.

BRAESIDE — Labtam International Pty. Ltd. has abandoned its plan to incorporate Motorola, Inc.'s 68000 microprocessor in its three-processor system. Instead, Labtam will use National Semiconductor Corp.'s NS16082 chip in the system, which will run Q1 Corp.'s Idris as well as Microsoft, Inc.'s MS-DOS and Digital Research, Inc.'s CP/M operating systems concurrently.

FRANCE

PARIS — OC France, a major copy machine vendor here, has become France's first user of the IBM 4361. OC's system, which replaced a 4331/2, includes 4M bytes of memory, six 3370 disk drives, two tapes, a line printer and two 3274 controllers. It runs under DOS/VSE, but OC is planning a conversion to MVS.

■

PARIS — Thomson-Brandt recently started selling Eagle Computer, Inc.'s microcomputers here under the name Micromega 16. Thomson also markets Micromega 32, a micro developed by Fortune Systems Corp.

JAPAN

TOKYO — Taking aim at IBM's 4361 system, NEC Corp. has introduced the mid-range Acos 430 system. Capable of performing 1 million instructions per second, the 1G-byte NEC machine is targeted for office automation applications as well as computer-aided design. It runs under NEC's Acos-4/AVP operating system. Options include a high-speed scientific calculation processor, an integrated array processor and a three-dimensional display. Although prices were not available, it was learned that the system rents from $7,660/mo, about half the rental fee of a comparable IBM system.

■

OSAKA — Kodensha, Inc., a leading software firm here, has unveiled My Letter Korean, a word processing system for Korean users that combines 2,000 Korean characters with 2,500 Japanese characters. The product was developed for NEC Corp.'s PC-8800; the two products are currently available as a turnkey system for $6,100.

NETHERLANDS

AMSTERDAM — Oscar Data has won an initial $10 million contract from Sweda International, Inc. to supply software for Sweda's point-of-sale cash register systems. The software order is thought to be the largest yet in the Netherlands.

PEOPLE'S REPUBLIC OF CHINA

BEIJING — The Chinese government has ordered $850,000 worth of microcomputers from Japan's NEC Corp. NEC will deliver 155 of its PC-8000 computers and another 150 of its more sophisticated PC-8800, which can display about 3,000 Chinese symbols and characters. The micros will be used for educational and agricultural applications.

UNITED KINGDOM

LONDON — Rank Xerox appears to be well positioned to be a leader in the emerging European office automation market, according to a recent study by Frost & Sullivan Ltd. According to the study, the vendor has already distinguished itself as having an "enviable record as an innovator" with products such as Ethernet and Star. But the report also maintained that Rank Xerox must win back the small copier market it lost to the Japanese during the 1970s and hope that IBM endorses Ethernet.

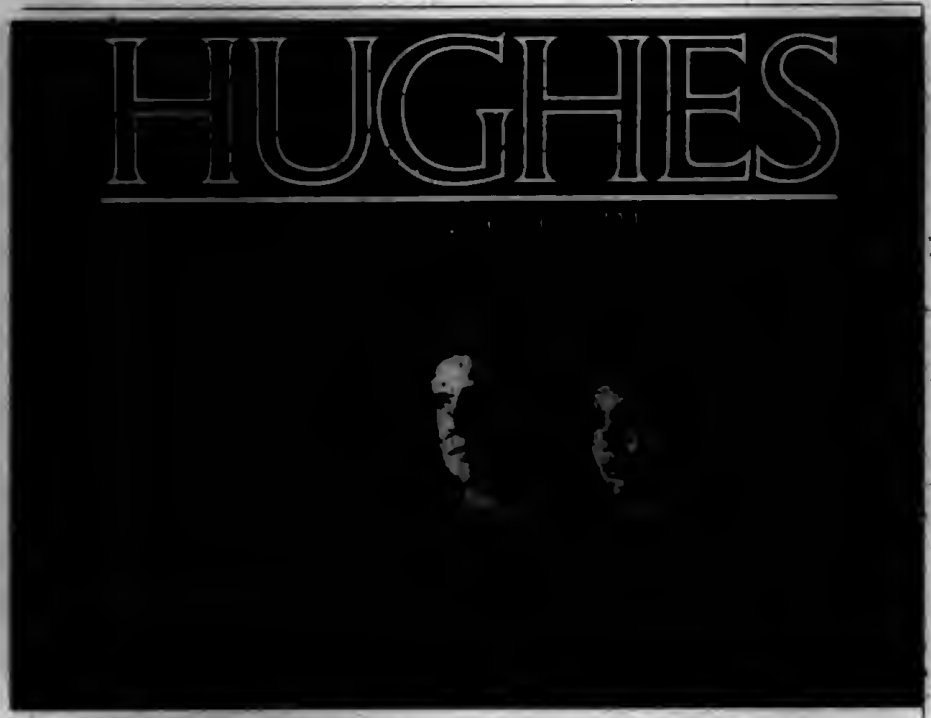
WEST GERMANY

MUNICH — IBM Deutschland GmbH and Siemens AG have signed an agreement to manufacture and market jointly storage peripherals. The contract initially calls for IBM to ship its 3380 mass storage disks to Siemens for its 7800 systems.

■

MUNICH — The German postal, telephone and telegraph (PTT) administration is reportedly trying to push through rate hikes for its Datex-P and Datex-L teleprocessing services. If the PTT is successful, customers will end up paying 50% to 60% more for the X.25-based service. The Ministry of Post and Telecommunications has yet to pass down an official decision.

HUGHES



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MIA CW-AG

TURNAROUND TIME

LARRY E. LONG

Q Our marketing people have asked us to respond to technical inquiries from three of our large customers who requested directions that would permit them to transmit orders directly from their computers to ours. This seems only logical, since the volume of transactions generated by these three customers is staggering.

Here is the problem. My staff is already overcommitted for the next two years. Preliminary estimates of manpower requirements for the project range from one to three man-years.

While this project would appear to be extremely cost-effective and convenient for both us and our customers, surprisingly I'm not getting much pressure to move on it. Personally, I think that a consumer goods company such as ours should place this project much higher on the priorities list, but those who make these decisions disagree. What are your feelings?

A You did not send a list of your priorities, so I cannot make any relative statements, but I am certainly willing to comment on the importance of intercompany networking: Don't delay.

Before long, your small and medium-size customers will be demanding similar services. The trend is to capture data as close to the source as possible. Why not go directly to the source, that is, your customers' computer systems?

Intercompany networking is no longer a carrot that you offer your customers; it is a marketing necessity in some industries (yours included). I know that several of your competitors already offer this service. Unless you can convince top management to revise its priorities or create funds for additional resources, your company is running the risk of alienating customers and losing a share of the market.

Q For the past five years, I've had responsibility for the DP department (about 20 people). I'll be the first to admit that I've neglected it in favor of my primary responsibilities in accounting and finance.

Being in the public sector, we cannot keep up with DP salaries and, as a result, have lost most of our best people. With our current staff, our DP department is faltering.

Management is building to get out of the DP business and bring in a facilities management group. One such group has proposed that they take over the entire DP operation. They said they can move into our present facility and use their software to do everything we are doing now, and do it for less than we are currently spending.

Is this possible?

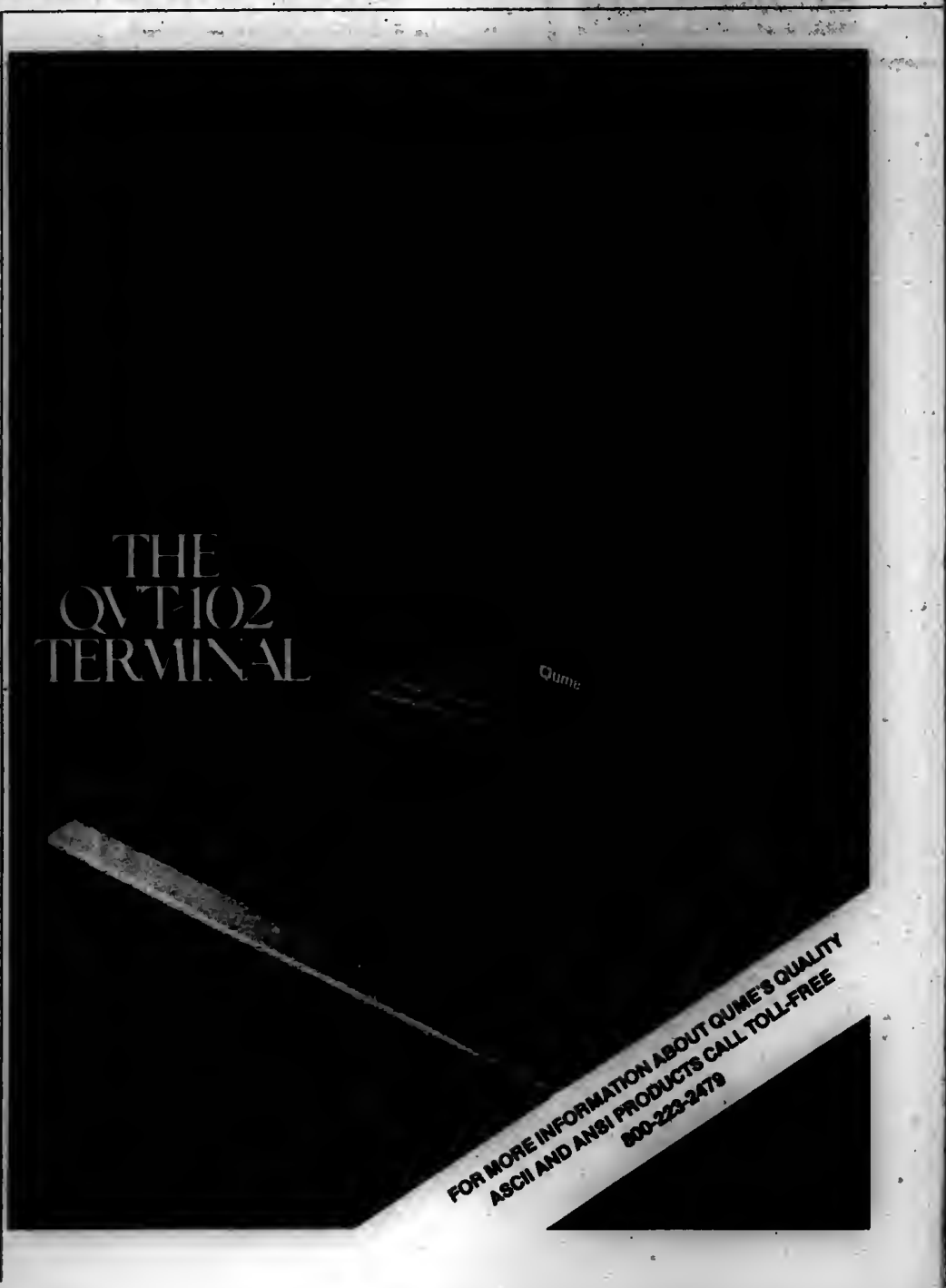
A Do what for less? It may be possible for the facilities management company to reduce DP costs and maintain the status quo over the short term, but is that what you want? You are apparently not satisfied with things the way they are.

Implied in the company's proposal is that services over and above the existing level of service will be billed. Don't overlook this important cost consideration.

External operation of the computer center has proved a smart decision for many organizations, but not for all. You never "get out of the DP business." Top management has an ongoing responsibility to relate information needs and priorities to the DP department. Whether run by an outside company or internally, it is top management's responsibility to provide strategic direction.

I detect from your letter that you expect to be absolved of further DP responsibilities once the facilities management company takes over. It doesn't work that way. If you continue to be aloof from DP, then don't expect any quantum leaps in the quality of the DP services.

Long, president of Long and Associates, is a consultant, lecturer and author in the field of information services. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, P.O. Box 880, Framingham, Mass. 01701.



Standard sign language of DP terminology created

Cursor

Scrolling

The National Association of the Deaf

By David Gross
CW Staff

SAN JOSE, Calif. — If Steven Jamison has his way, the nation's deaf computer professionals soon will be communicating with their managers and co-workers by using a new standardized sign language of DP terminology.

For the past 10 years, Jamison, a personnel consultant at IBM's Santa Teresa laboratory here, has recruited deaf college students for a summer work program conducted by IBM. In the course of that work, he became aware of the lack of any universal agreement on signs for computer terminology. For example, three or four different signs are used for the word "computer" alone.

Convinced of the need for some standardized terminology, Jamison began in 1981 to compile a comprehensive glossary of DP terms in American Sign Language. IBM agreed to provide the time and money he needed to carry out the two-year project. Jamison's effort culminated last year with the completion of a 600-term glossary.

Those 600 terms have been compiled in an illustrated reference book titled "Signs for Computing Terminology," recently published by The National Association of the Deaf in Silver Spring, Md.

Jamison and the book's publisher expect that the book will be widely used by hearing-impaired students, teachers and computer professionals. They agree, however, that its greatest potential benefit may be for DP managers and others who want to improve their communication with the deaf.

At IBM and other companies within the computer industry, many deaf persons work in technically oriented jobs, such as programming, in which the ability to hear is not as critical as in other fields.

But communicating with a deaf worker can be tedious if someone has to finger spell all technical terms, Jamison said.

Panel of volunteers

To compile the glossary, Jamison recruited 24 associates to serve on an advisory panel for the project. Most of these volunteers were computer professionals; the majority were not only deaf but also skilled signers.

By means of mail surveys and a three-day workshop, the panelists reached agreement on which signs they preferred for all 600 DP terms. Jamison said the primary requirement for choosing a particular sign was the likelihood of its acceptance by the deaf community.

All publishing rights for the book have been turned over to The National Association of the Deaf, which will retain any proceeds from the book. S. Melvin Carter, director of the association's Communicative Skills Program, said the book has sold more than 2,000 copies during its first month of publication.

One company, Integrated Microcomputer Systems, Inc. of Rockville, Md., purchased 500 copies of the book for its employees and associates.

More information about the book is available from The National Association of the Deaf, 814 Thayer Ave., Silver Spring, Md. 20910.

QVT-102
The Price-Performance Leader.

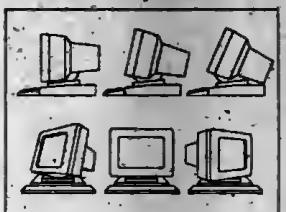
Qume's new QVT 102 VDU terminal has all the features of the Hazeltine 1500,* Lear Siegler ADM 3A/5,† and TeleVideo 910,** and emulates any of these terminals by simple menu selection. Features found in higher-priced terminals are standard, including block and conversational modes, local editing, 25th status line, menu set-up mode, and screen content printing.

The QVT 102 takes up minimal workspace and is designed to please the operator. Its non-glare green or amber screen minimizes eye strain with a big 9 x 12 character cell. The screen tilts and swivels for perfect viewing, and the low-profile keyboard is detached to allow placement for ideal reach and hand-rest position.

Sophistication. Comfort. And affordable price. Qume's Model 102 terminal is easily the smartest choice in its class. Features include:

• Line block, Page block, and Unprotected block transfer modes • Four separate function keys (twelve functions) • Line drawing graphics characters • Tilt/swivel, non-glare, green screen (amber optional) • 9 x 12 character cell resolution, 7 x 9 character size • Detachable, low-profile typewriter style keyboard with numeric pad • 24 lines x 80 characters with a 25th status/menu set-up line • Screen-saver time out (an inactive terminal shuts off its screen after fifteen minutes with no screen data loss) • 5 video attributes: blink, blank, reverse video, underline, and half-intensity • 3 emulations: Hazeltine 1500, Lear Siegler ADM 3A/5, and TeleVideo 910 • Self test • Switching power supply (efficient operation and low power consumption).

Display Format
24 lines x 80 Characters
25th status/set-up line (defeatable)
Character Formation
7 x 9 matrix in a 9 x 12 cell
Displayed Character Set
96 ASCII characters, 15 line-drawing symbols, and 32 control character symbols
Editing
Cursor: up, down, left, right, and home. Character/line insert and delete, erase to end of line/field/page, tab, back tab, field tab, field back tab.
Communications Interface
EIA RS232-C, 20 mA current loop
Communication Protocols
DTR and/or X-ON/X-OFF
Communication Modes
Full or half duplex, block/line, block/page: 7 or 8 data bits



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Character Attributes
Blink, blank, underline, reverse video, half intensity
Keyboard
Detachable, low-profile (home row 30mm from work surface), alphanumeric keys, 14-key numeric pad, 4 function keys (12 functions), defeatable auto-repeat and key click. Print, setup, and no scroll keys.
Fields
Protected and Unprotected fields
Parity
Odd, even, mark, space
Screen-saver
Screen shut off after 15 minutes of inactivity with no data loss (defeatable)
Emulations
Hazeltine 1500, Lear Siegler ADM-3A/5, TeleVideo 910
Set-Up Mode
Menu style, preserved in non-volatile memory
Power Requirements
95-125 VAC
200-264 VAC
50/60 Hz. 30W
Dimensions
Keyboard 1 5"(H) X 10"(W) X 8"(D)
Display 14"(H) X 13"(W) X 12"(D)
Weight
Display 19 lbs. 2 oz., Keyboard 3 lbs.
Options
Amber phosphor screen
14-inch screen
Foreign character sets
20 mA current loop (passive and active)

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†Lear Siegler ADM 3A/5 is a registered trademark of Lear Siegler, Inc.
**TeleVideo and TeleVideo 910 are registered trademarks of TeleVideo Systems, Inc.

Command Codes

Cursor home	Ctrl/
Cursor right	Ctrl/L
Cursor left	Ctrl/H
Cursor up	Ctrl/K
Cursor down	Ctrl/J
Clear screen	Ctrl/Z
Clear from cursor to end of line	Esc T
Clear from cursor to end of screen with spaces	Esc Y
Clear all foreground	Esc ,
Line insert	Esc E
Line delete	Esc R
Keyboard lock	Esc !
Keyboard unlock	Esc "
Bell ring	Ctrl/G
Columns tab	Ctrl/I
Address cursor (row/column)	Esc=(rc)
Read cursor (row/column)	Esc ?(rc)
Status line display	Esc)
Status line suppress	Esc (
Monitor mode on	Esc U
Monitor mode off	Esc X or Esc u
Print transparent on	Ctrl/R
Print transparent off	Ctrl/T
Write protect on (half intensity)	Esc)
Write protect off (full intensity)	Esc (
Graphic mode on	Esc $
Graphic mode off	Esc %
Auxiliary port on	Esc @
Auxiliary port off	Esc A
New line	Ctrl/_
Back tab	Esc I
Clear screen to nulls	Esc *
Display control character equivalent	Esc F n
Load cursor line	Esc [n
Load cursor column	Esc] n
Print entire screen	Esc P
Print from top to cursor	Esc N
Print from cursor to end	Esc O
Tab on	Esc 1
Tab clear	Esc 2
Tab all clear	Esc 3
Autoscroll on/off	Esc H
Self test	Esc V
Protect mode on	Esc &
Protect mode off	Esc '
Send line unprotected only	Esc 4
Send page unprotected only	Esc 5
Send line all	Esc 6
Send page all	Esc 7
Clear foreground to nulls	Esc .
Block/page on	Esc B
Conversational mode on	Esc C
Block/line on	Esc D
Character insert	Esc Q
Character delete	Esc W
Termination character select	Esc x N

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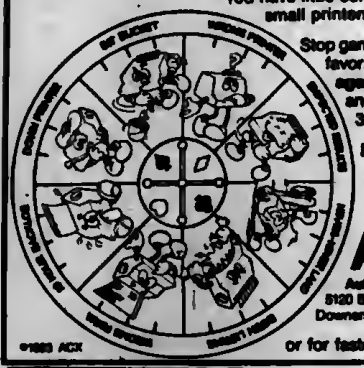

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NEWS

Bureau doubles output with micro-to-mini link

ATLANTA — By developing a communications package to link varied microcomputers with its minicomputers, a service bureau here doubled in a year the number of tax returns it processed for 400 accountants spread throughout five Southeastern states.

Infoservices, Inc. sought a way to provide the on-line power of its minicomputers to accountants who use more than 30 different types of microcomputers at remote locations. The company developed a software system that it said allows remote users to utilize their micros as intelligent office machines that draw on the resources of Infoservices' Prime Computer, Inc. 550 supermini and Prime 400 mini, which are being replaced by a Prime 750 supermini.

The software, known as Infocomm, is a communications program which will run on the more than 200 microprocessors based on Digital Research, Inc.'s CP/M operating system, as well as microcomputers running under Digital Research's CP/M 86 and Microsoft, Inc.'s PC-DOS and MS-DOS, according to Infoservices Vice-President Bob Westerman.

The program permits the transmission of Ascii and binary files bi-directionally between the microprocessor and the host computer. It also provides a conversational mode whereby the microprocessor becomes a dumb terminal for routine interactive processing on the host system.

With clients in Georgia, Florida, Alabama, Tennessee and North Carolina, Infoservices maintains four divisions: a tax division, a time-sharing service, a division that markets Infocomm and a division that sells accounting packages. A focus of the service bureau operation has been the processing and laser printing of tax forms for professional accountants.

"Users throughout the five-state region who desire to do their own data entry use more than 30 different brands of micros running under more than four different micro operating systems to create tax data files.

"These files are then transferred to our Prime computers in Atlanta using our communications package Infocomm and the complementary program, Infohost, on the Prime. We even recreated on the micros the standard text editor available on the Prime so that our users do not have to contend with entirely different programs in their data processing work," Westerman said.

Users can process their tax returns interactively while on-line with the Prime systems. This reportedly gives them access to the greater processing power of the Prime minis and Infoservices' laser printers and access to current versions of software.

Infoservices support personnel can answer questions on specific returns by accessing the return on the Prime via in-house terminals and can monitor the interactive process while the user is preparing a return. After completing the return, the user can print control sheets and flag the return to be printed and delivered by Infoservices.

"We further capitalize on our customers' in-office computers," Westerman noted, "by providing tutorial programs that run on those microcomputers and that teach the user how to utilize our complementary system of micros and Prime."

He added that clients also use the communications system to produce financial statements and other reports, and that use of remote data entry decreases the time-sharing charges to customers who wish to have large computer power without a costly investment in hardware and software.

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It utilizes a high performance, cost-effective and widely available media, selected specifically for minifloppy plug compatibility.

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It is from the same company who standardized the minifloppy with Shugart and the 5.25" Winchester drive with Seagate.

Considering supporting services, minifloppy compatibility, product availability and proven performance, it's apparent there is only one complete microfloppy standard.

The Dysan 3¼" Flex Diskette.

3¼" Flex Diskette is a registered trademark of Dysan Corporation.

Dysan CORPORATION

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Query system allows utility to break 'language barrier'

HICKSVILLE, N.Y. — Computers can be confusing to people who don't use them every day, and part of the problem has to do with the "language barrier" that must be overcome before most computers can be operated.

For employees of the Long Island Lighting Co. (Lilco), the public utility serving the Long Island area, computers are becoming easier to understand — and work with — thanks to an on-line software query system that allows users to interact with computers by using conversational English terms.

Lilco runs the Intellect software system from Artificial Intelligence Corp. of Waltham, Mass., with IBM's CICS teleprocessing monitor on an IBM 3033 in an MVS environment. Using Intellect, employees can access information on the complete listing of all computer equipment owned or leased by Lilco, current employee applications on file and the entire fleet of customer service vehicles.

When users log on to the system, they are greeted by the following message drafted by Donald Weidman, administrator of Lilco's Office of Computer Services here: "Good morning. Welcome to the world of self-service computing. We'll try to answer all the questions you pose. Don't be afraid to try."

Then, instead of relying on a complex series of commands, users draw data through Intellect with English-language commands. The system requires no programming or use of codes and imposes no requirements for structure, syntax, punctuation, definitions or key words, Weidman said.

"It's just like talking to a person," he explained. "Suppose you wanted to know the number of applicants on file for a position in the customer relations department. By gaining access to the applicant's file and typing, 'Tell me how many people have applied for positions in customer relations,' the system responds with information such as names and addresses, education, application test scores, interview dates and the other details you would need to make an initial evaluation of the applications on file."

Before Lilco installed the Intellect package, its data security staff developed a front-end security system which requires comprehensive user identification, according to Weidman. In addition, Intellect's dictionary of data terms is constructed so that only users with approved security codes can gain access to the system. Once the appropriate security codes are fed into a computer terminal at Lilco, however, the user need only type in the questions, and Intellect will do the rest.

"If you aren't sure what information you would like to have," Weidman said, "you only have to ask the computer, 'What information is available?' and Intellect will provide a complete list. You can continue asking questions to obtain even further details about the applicants on file, for example, or you can go on to a new subject by simply asking a different question."

That ability to link a continuing series of questions is the key to the system's functionality, Weidman said. "In the past, users had to depend on preformatted reports, or they had to send their requests for additional information to the information systems department, which would then generate a new report. Often, the answers to a question triggered other questions, which would also have to be answered in the same time-consuming way. With Intellect, the user asks questions directly and gets an answer right away."

User response to the Intellect system has been encouraging, Weidman said. "It provides decision-making information quickly. It's a very flexible system with no rigid ground rules, and the computer dictionary can be expanded to suit the terms used by different departments."

Lilco plans to expand the use of Intellect to other corporate applications. "This type of people-friendly program will allow more people to take advantage of computer technology," Weidman said.

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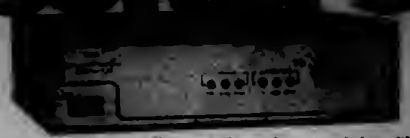

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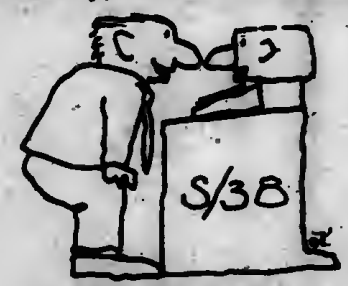

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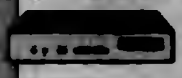

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CALENDAR

WEEK OF MARCH 11

MARCH 12-15, LAS VEGAS — **Interface '84.** Contact: The Interface Group, Inc., 300 First Ave., Needham, Mass. 02194.

MARCH 13-16, DENVER — **Data Communications: Components, Systems and Networks.** Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

MARCH 14, CHICAGO — **Successful Strategies for Acquisition and Control of Microcomputers: The Revolution.** Contact: Datamation Institute, Suite 415, 850 Boylston St., Chestnut Hill, Mass. 02167.

MARCH 14, PITTSFIELD, MASS. — **Beyond 1984: Looking at Life in a High-Tech Society.** Contact: Berkshire Community College, West St., Pittsfield, Mass. 01201.

MARCH 14-16, LOS ANGELES — **Data Communications: An Introduction to Concepts and Systems.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

MARCH 14-16, LANSING, MICH. — **Systems Project Management.** Contact: Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138.

MARCH 14-16, LAS VEGAS — **Data Communications: Networks, Design and Optimization.** Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

MARCH 14-16, CHICAGO — **Computer Performance Measurements and Capacity Terminology.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

MARCH 14-16, FORT LAUDERDALE, FLA. — **Bonaventure Intercontinental Telecommunications.** Contact: Gail van Tubergen, Dataquest, Inc., 1290 Ridder Park Drive, San Jose, Calif. 95131.

MARCH 14-16, ARLINGTON, VA. — **SAS Macro Language Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

MARCH 14-16, ANAHEIM, CALIF. — **The International Security Conference and Exposition.** Contact: Michael Berke, Cahners Exposition Group, 12233 W. Olympic Blvd., Los Angeles, Calif. 90064.

MARCH 14-16, ORLANDO, FLA. — **Structured Testing.** Contact: McCabe Associates, Suite 111, 5501 Twin Knolls Road, Twin Knolls Professional Park, Columbia, Md. 21045.

MARCH 14-16, CHICAGO — **Financial Information Systems — Integrating Personal Computers.** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

MARCH 14-16, SCOTTSDALE, ARIZ. — **Data Base Management.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

MARCH 14-16, ST. LOUIS — **Financial Management Reporting.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

MARCH 14-16, HOUSTON — **IMS.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

MARCH 14-16, WAKEFIELD, MASS. — **Local-Area Networks.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

MARCH 14-16, COLUMBUS, OHIO — **Network Communications Protocols.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

MARCH 15, ATLANTA — **SDM/Structured.** Contact: Mary Aliano, AGS Management Systems, 320 Walnut St., Philadelphia, Pa. 19106.

MARCH 15-16, MADISON, WIS. — **Technology Outlook.** Contact: Engineering Registration, The Wisconsin Center, 702 Langdon St., Madison, Wis. 53706.

MARCH 15-16, LOS ANGELES — **Computer Networks: Protocols, Standards and Compatibility.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

MARCH 15-16, PHILADELPHIA — **Reducing Software Complexity.** Contact: Infosci, Inc., Box 7117, Menlo Park, Calif. 94026.

MARCH 15-16, WASHINGTON, D.C. — **Public and Private Packet-Switched Networks — The X.25 Protocol.** Contact: The George Washington University School of Engineering and Applied Sciences, Washington, D.C. 20052.

MARCH 15-17, HOLLYWOOD, FLA. — **SAS Basic Course, SAS Processing Course, SAS Computer Performance Evaluation and SAS Macro Language Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

MARCH 16, NEW YORK — **Legal Aspects of the Software Acquisition.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940. Also being held March 23 in Chicago and March 30 in Boston.

MARCH 16, SAN FRANCISCO — **Planning for Extended Architecture: An Unbiased Analysis.** Contact: Techtran, 72 Cummings Point Road, P.O. Box 10212, Stamford, Conn. 06904.

WEEK OF MARCH 18

MARCH 18 and 20, BALTIMORE — **1984 Telecommunications Seminar.** Contact: Alex Brown & Sons, Inc., 135 Baltimore St., Baltimore, Md. 21202.

MARCH 18-22, ORLANDO, FLA. — **The 10th American Institute of Aeronautics and Astronautics (AIAA) Communications Satellite Systems Conference.** Contact: AIAA Communications Satellite Systems Conference, 1633 Broadway, New York, N.Y. 10019.

MARCH 18-22, RIYADH, SAUDI ARABIA — **Saudi Computer 1984 — The Business Computer Show.** Contact: Philip Jenkinson, Saudi Computer 1984, Overseas Exhibition Services Ltd., 11 Manchester Sq., London W1M 5AB, England.

MARCH 19, ORLANDO, FLA. — **Software Configuration Management I.** Contact: Institute of Electrical and Electronics Engineers Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

MARCH 19, ORLANDO, FLA. — **Ada.** Contact: Institute of Electrical and Electronics Engineers Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

MARCH 19-20, SANTA CLARA, CALIF. — **Manufacturing Control for Top Management.** Contact: Management Education Department, American Electronics Association, P.O. Box 10045, Palo Alto, Calif. 94303.

MARCH 19-20, HARTFORD, CONN. — **Computer System Security Management.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705. Also being held March 21-22 in Wakefield, Mass.

MARCH 19-20, LOWELL, MASS. — **Integrating the Information Workshop: The Key to Productivity.** Contact: ACM Northeast Regional Conference, P.O. Box 499, Sharon, Mass. 02067.

MARCH 19-20, ORLANDO, FLA. — **Dbase II.** Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705.

MARCH 19-20, SAN FRANCISCO — **Managing Computer Projects.** Contact: Battelle, 4000 N.E. 41st St., P.O. Box C-5395, Seattle, Wash. 98105. Also being held March 22-23 in Detroit.

MARCH 19-21, LOS ANGELES — **Personal Computers in Business: The Micro-Mainframe Connection.** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

MARCH 19-21, BOSTON — **American Management Associations (AMA) 65th Annual Human Resources Conference: Innovation in a Changing Environment.** Contact: AMA, 135 W. 50th St., New York, N.Y. 10020.

MARCH 19-21, SAN FRANCISCO — **Power of Personal Computers.** Contact: The Institute for Professional Education, Suite 303, 1515 N. Court House Road, Arlington, Va. 22201.

MARCH 19-21, WASHINGTON, D.C. — **Configuration Management of Software Programs.** Contact: The George Washington University, Washington, D.C. 20052.

MARCH 19-21, NEW YORK — **Project Management: A Practical Approach.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

MARCH 19-22, NEW YORK — **CICS/Design.** Contact: Comped Technical Corp., 10 E. 21st St., New York, N.Y. 10010. Also being held March 26-29 in Dallas.

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Info users to meet March 4-8

SAN DIEGO — The Info Users Group, comprised of users of Henco Software, Inc. products, will hold its third annual national meeting at the Hotel del Coronado here March 4-8.

The keynote speaker will be John Kirkley, executive editor of *Datamation* magazine, who will speak on "The Changing Information Environment Within a Corporation."

Other speakers will include Henco President Henry T. Cochran, users of Henco products and representatives from Harris Corp., Prime Computer, Inc., Digital Equipment Corp. and Honeywell, Inc.

The registration fee is $265, which can be paid at the door or sent to R2 Computer Systems, Inc., 5533 Ruffin Road, San Diego, Calif. 92123.

Dates set for Mumps seminars

BOSTON — Seminars for both programmers and nonprogrammers interested in learning more about the Mumps language will be held by the Mumps Users Group at the Sheraton Boston Hotel here March 5-6.

For nonprogrammers, there is "Introductory ANS Mumps Programming" March 5 and "File Manager" the following day. For programmers, there is "Development and Maintenance of Effective Mumps Applications" on March 5 and an advanced version of "File Manager" March 6.

Seminar tuition is $120. Registration information is available from the Mumps Users Group, Suite 308, 4321 Hartwick Road, College Park, Md. 20740.

'I don't get it. This week is almost over and nobody's come out with a new personal computer.'

N.Y. conference to examine micro strategies

NEW YORK — A conference on developing and implementing microcomputer strategy and policy will be held March 1 at the Park Lane Hotel here. Called "Microcomputers: High Performance/High Payoff," it will explore methods for enhancing organizational performance through the use of microcomputers.

Sponsored by Micro Mainframe, Inc. and Morris Decision Systems, Inc., the conference will feature as speakers Peter G.W. Keen, conference chairman and chairman of Micro Mainframe; Anthony P. Morris, president of Morris Decision Systems; and Thomas W. Johnson, vice-president for information systems, State Street Bank.

The conference will feature a panel discussion by microcomputer users as well as a round table discussion on the subject of "Microcomputer Opportunities and Challenges."

Also speaking will be representatives from American Express Co.; Michelin Tire; Hartford Insurance Group; Sun Co., Inc.; Touche Ross & Co.; and the Internal Revenue Service.

The registration fee is $395 per person. More information is available from Micro Mainframe, 215 First St., Cambridge, Mass. 02142.

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EDITORIAL

Logic resting in the illogic

The logic rested in the illogic, and the decision of Nissan Motor Manufacturing Corp. U.S.A. to combine its information systems operations with its purchasing department [CW, Feb. 13] is a reminder that businesses may do well to take a second look — in some cases, a first look — at the unorthodox.

Nissan could have followed the well-worn path of other automated manufacturers and buried its computer and communications systems in the finance or production departments. But it didn't, theorizing that computer personnel and equipment in those departments sometimes have been victimized by the whims of noncomputer-oriented department heads who feel, at least in their own minds, that they most need the information systems' resources.

Instead, Nissan paired information systems with purchasing, a department that places minimal demand on those systems. The logic, according to Vice-President for Purchasing and Information Systems Robert A. Frinier, rests in Nissan's belief that information systems should be managed by executives who will not mold them to favor the parent department.

Frinier, who admits that he is learning fast what computers are about, said the move was made to sidestep the "bias" that might occur when someone like a vice-president of finance or vice-president of production shapes information systems to his own department's benefit and to the detriment of others who need the computer resources. Nissan hopes that the setup will provide all departments with fair access to the information systems.

Time will judge whether Nissan's reorganization works. It might indeed "knock the computer industry on its ear," as Frinier suggested with a smile. Or it might not; unfortunately, management decisions don't carry money-back guarantees. However, Nissan's decision carries a noteworthy message: Even the farfetched is worth considering.

The business world, particularly the computer-related aspect of it, will never stop evolving. At the heart of that evolution is the conviction that if something doesn't work right, it's worth trying something new.

'You know how the president feels about fat in the budget'

LETTERS TO THE EDITOR

Clearing up some issues concerning data processing in Nicaragua

I wish to clarify certain editorial comments that were added to the text of my article on Nicaragua "Nicaraguan DP managers face special ills" [CW, Jan. 23]. I spent two weeks in Nicaragua working in data processing. On the basis of my observations, I take issue with the following:

- There is a reference to "war-torn Nicaragua." Although Central Intelligence Agency-financed "Contras" regularly attack along the sparcely populated border with Honduras, Nicaragua is not at war. Nor is it war-torn.
- In the article, reference is made to a "Marxist regime." The Sandinista government is certainly socialist, but it also supports and encourages free enterprise. The economy is "mixed," not "upside-down."
- A "lack of state-of-the-art technology" is mentioned. Developing countries do not need state-of-the-art technology; they need appropriate technology. An example of this is a pest-control system that runs on a microcomputer that was recently developed by American programmers in Nicaragua.

I could go on, but the point of my article is that in Nicaragua, programmers are expected to see themselves not as the technological elite, but as active participants in a revolutionary process. The problem facing DP managers is that many experienced programmers and analysts have left for higher paying jobs abroad.

The professionals who have remained, like Erick Brenes, director of data processing at the Central Bank, are deeply committed to the Sandinista movement. For them, computers are tools for increasing production and services. The problem of political apathy among young programmers is very real for them, for if these programmers are not motivated by a desire to help their fellow countrymen they, too, may leave. This is not a case of "government pressure to fight for the country's Marxist regime." Nor is Nicaragua "one of the world's least desirable places for computer professionals," as attested to by the growing number of American programmers and consultants now working there.

Barbara Schaffer
Berkeley, Calif.

DP field in Nicaragua limited by economy, decades of larceny

While Barbara Schaffer's article "Nicaraguan DP managers face special ills" [CW, Jan. 23] conveys a sense of the limitations of data processing employment in Nicaragua, the essential context in which it takes place is missing.

Even under the best of circumstances, professional work in the data processing field in that country would still be limited: The economy is overwhelmingly poor and agricultural, and decades of larceny by Nicaragua's former leaders did nothing to develop the human resources needed for a healthy economy.

Today, data processing in Nicaragua must also contend with a U.S. boycott affecting new and spare computer parts, among other crucial im-

Continued on page 36

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VIEWPOINT

Tweedledum vs. Tweedledee

LECHT ON SCIENCE

CHARLES P. LECHT

My purpose is not to judge the merits of allowing an American computer look-alike industry to function. The fact that it is here and has been for a long time means that our various watchdog and regulatory agencies are comfortable with its efficacy and are reasonably confident that they can handle the unique problems associated with it.

But the increasing number of litigation-bound cases we read about wherein the charge of copying figures as the central issue is rather unsettling. The very existence of such allegations lessens our enthusiasm to consider a look-alike manufacturer's wares for purchase because of our fear that the companies that make them may be in for trouble. Too much success may, paradoxically, guarantee it.

Look-alike lawsuits, as you can imagine, involve a wide variety of copying and/or just plain lifting charges. These include the gross no-no's of blatantly replicating another company's logo and affixing it to a shamelessly manufactured version of its patented products or distributing, without permission, outright duplicates of someone else's proprietary and copyrighted work to augment otherwise original developments.

The battleground between "look-alikers" and "real-thingers" seems hottest, for the moment, in the area of software. The kind of event reported in the article "Taiwan court sentences six for 'bad Apple'" [CW, Feb. 6.], in which six Taiwanese computer executives were sent to eight-month prison terms each for copyright and patent infringement of Apple Computer, Inc. software, lets us know how serious world resolve has become to stop pirating in our industry. The previous week's coverage of IBM's victory against two companies who, according to *The Wall Street Journal*, were violating copyright law by offering an IBM Personal Computer look-alike along with IBM software from the real thing confirms this; however we may be inclined to sympathize with little guys trying to make a buck, we cannot condone their doing so with other people's property.

We can, of course, truly sympathize with honest look-alikers, those whose products confirm current legal opinion on how they must behave. Even if they fully adhere to the letter of the law, it is clearly still dangerous to create a truly compatible product. Not only do you have to survive the supreme tests of software and user program transferability between their tweedledee and your tweedledum, but if you do it too well, the likelihood is that a larger test is in store: survival in court against the manufacturer whose system you so admired that you made one in its image.

Thus, as you can imagine, life for the look-alike manufacturer isn't easy. Only the toughest can survive its pitfalls. Each successful product can expect to be subject to the closest scrutiny of a chorus of attack lawyers clamoring to contest that you copied it. To minimize the possibility of a truly unfavorable legal outcome, corporations building look-alikes may be well-advised to build, as well, their judicial pleas for innocence, if charged, and ineptitude, if convicted.

What's going on, what's possible

While each such manufacturer must surely devise a strategy in its own image, it is always prudent to see what others are up to before building anything. So without further ado, I offer the following as a sample of what's going on and a smidgeon of what's possible. Because of the possibility that this sampler may be seen as an attack on the practices of certain specific companies by their ever-alert attack lawyers, I wisely present it under the guise of advice.

First of all, don't make the look-alike system yourself. Assemble it if you must, but for the Lord's sake, don't make anything. Subcontract the entire system so that if by accident your look-alike turns out to be the real thing, your hands are kind of clean. Potential subcontractors should clearly include those already making the real thing for its manufacturer; subcontracting seems to be in vogue these days, so finding them shouldn't be too difficult. I advise the chosen subcontractors to, in turn, subcontract the look-alike manufacturer's work to eligible myopic components companies that know little more than how to deliver their products and that ask no questions.

Now that you've established your manufacturing plans, it's time to bring your look-alike to market. First, boldly take out full-page ads everywhere. The more the better. Show for six months two identical bananas side by side, but provide no text. Next, test the climate for introduction of your product as a hesitant swimmer tests the water temperature with his toe. A trade show, like the Consumer Electronics show, is best for this purpose because you can make a gigantic splash without actually "demoing" anything. A smart giveaway should generate enough excitement to bedazzle booth attendees. I suggest a mirror on which is inscribed in bananas "My look-alike and me," suitable for boardroom or boudoir. Employ the Dallas Cowgirls to pass out banana buttons and do so as near to the real-thing manufacturer's booth as you can get. If the Cowgirls aren't tackled by a team of attack lawyers, you're getting close to a safe introduction of your real thing.

Call a press conference to reveal the banana mystery. When the press is assembled, have a Cowgirl roll a gigantic banana — a zipper running along its length — out on the conference room floor, then slowly unzip it, letting an apple — preferably a mackintosh — plop to her feet. Check faces for outraged litigious looks while she shoves the apple back in its skin and, with a Cheshire cat grin, rezips the banana.

Your secret is out. Now there's no turning back: Honest look-alike or not, prepare for war. Immediately confuse any lurking enemy by engaging in guerrilla tactics for as long as necessary. Have Chiquita Banana's granddaughter rush out to the press and apologize for all bananas everywhere. Have a kid dressed as a peanut start to squall. Next bring in an Eve to give Adam yet another apple to bite. Have an eagle swoop down to peck at the squalling peanut. Have a midget with a slingshot end the action by killing the eagle with an acorn. You get the idea.

This is the moment of truth: the demo. Quickly and quietly slip Macrosoft-DOS into the computer — preferably a real thing camouflaged to look like the look-alike you're announcing. If everything works out, your product is in the clear, and you're ready to try your hand at real commercial success.

If not, get the hell out as soon as possible. Retain F. Lee Bailey. Make a donation to John Glenn's campaign to establish your astronomical innocence. Disavow any connection with your product. Act like a Silicon Valley millionaire tired of creeping socialism and the mealybugs spreading it in Washington, D.C., and dedicate yourself to fight for America's return to the principle of the freest of enterprises — the liberty to produce anything at anytime by anyone, no matter who owns it. Go on TV and demand this — or death.

All right, all right — you may think these practices I advise to be excessive. But after all, warding off attack lawyers isn't easy. Oh, by the way, any thing, word or idea in my "advice" that suggests an actual firm or product, living or dead, is purely coincidental.

Lecht is chairman of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.

LETTERS TO THE EDITOR

Continued from page 24

ports. And then there is the impact of the war being waged on the country by the large U.S.-financed "Contra" army in Honduras.

This, perhaps, is what makes it what the author calls "one of the least desirable places for computer professionals."

Nicaraguan programmers and other DP personnel cannot in the near future live a technology beyond their means, but they can make substantial contributions that can palpably improve economic performance and the standards of living. They can, as essential human resources, also participate in such trends as the "innovators movement."

Employees recognized by their peers as contributing new tools, processes or solutions receive government support in the way of access to shops, research facilities or special education with which to develop their ideas.

Needless to say, computer professionals here can influence policies that will enhance peaceful opportunities for their Nicaraguan counterparts.

Ramon Bueso
Senior programmer
Somerville, Mass.

Some more 'reasonable' ideas for marketing personal computers

I would like to comment on Jack Stone's article "Where are the knowledgeable micro retailers?" [CW, Jan. 30]. For some time now, Stone has recounted his "frustration, anxiety, depression and irritation with personal computer retailers." Apparently, Stone has convinced himself that all of his ideas for interfacing computers are rational and reasonable.

So now Stone wants to dump his random-access memory into a cassette recorder and load the data into his Processor Technology Sol 20 host. Never mind the fact that even *Byte* magazine has not had an ad for a Sol 20 for several years; any self-respecting dealer should stop training his service technicians and salesmen on current computers and focus on the good old Sol 20. Boy, my local dealer would love that. Why, I bet that the closest Sol 20 owner to Iowa is probably in Texas.

And a cassette dump. Wow! Of all of the personal computers that are sold in this area, I bet that there must be one or two with cassette interfaces in this day and age.

Now that Stone has settled on a spiral notebook and three pens, let us focus on his other needs for his trips abroad. First, we'll need a vehicle able to travel in the Sahara under high noon and to roam Antarctica during the winter. It must be able to fold up into a suitcase and fit under an airline seat, but it must be able to pull three tractor trailers filled with clothes, dime novels and back issues of *Computerworld*. Let's see, each ball-point pen should be capable of automatically erasing simply by aiming at the offending errors and rubbing the pen between the fingers. Not state of the art, but it would be quaint enough.

The notebook should be able to make duplicate copies of itself by being placed under a pillow at night. For two copies, use two pillows, four copies, four pillows and so on.

I hope that these ideas will help Stone in his trips around the world. Certainly, my ideas are as reasonable in today's high-tech world as Stone's ideas of how personal computers ought to be marketed and sold.

Richard K. Thompson
Fairfield, Iowa

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CORPORATE HEADQUARTERS

VIEWPOINT

LETTER TO THE EDITOR

Caricature of user needs redrawing

In Jack Stone's article, "User emancipation from Big DP Brother: 1984" (CW, Dec. 26/Jan. 2), Stone is, of course, writing for an audience of DPers. But I feel he is being insensitive to the needs and aims of users.

Stone has caricatured a user as a DP ignoramus whose only objective is to "get control over the data processing establishment." He speaks as if users view DP as an end in itself and as if users "demand . . . support of computing machines, software, documentation, training and supplies" only to frustrate the DP manager. And though users always have a lot to learn about DP, I doubt if they have to be "straightened out."

What I don't think Stone realizes is that users are not trying to use their microcomputers to replace the DP establishment, but to supplement it. Micros are sophisticated tools that can quickly return dividends of increased productivity. There will be problems of data compatibility and a proliferation of data bases, but one must remember that these data bases are out there anyway, manually, though they are called ledgers, indexes, reports or lists — not data bases.

A clerk now using an electronic spreadsheet is doing the same job as he had been doing manually only now he is doing it faster and more accurately. A manager who develops a data base management system application on a microcomputer to handle a few thousand records is doing no more than his staff did before with index cards and file boxes, but is now doing it faster, cheaper and more accurately. In both cases, it would have been inefficient to have the DP department develop applications on the mainframe.

I am sure that the picture painted by Stone in his article is true somewhere, but I think it's the exception. Though there are some users resistant to learning data processing terminology, most try to understand as best they can. Their interests will always be, though, in the ends, not the means. As far as getting "answers to their trivial technical questions in the documentation" and "not . . . pestering the DP department," maybe Stone should offer a course in computerese; it is normally the manual not being aimed properly at its intended uses, not the intelligence or diligence of the user, that is at fault.

It is time that we stop talking about the user vs. the DP establishment and start talking about how users working with the micro hardware and accompanying software can, with the help of the DP department, reach a company's goals. It is the elimination of the waste of human resources doing tedious tasks manually that the use of micros can alleviate that should consume one's efforts.

Donald E. Standford
Schaumburg, Ill.

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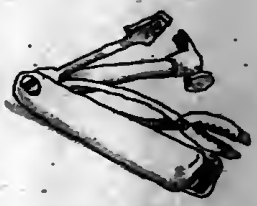

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VIEWPOINT

How new micro users convert to DP faith

HUMAN CONNECTION

JACK STONE

It is almost eerie how consistent the conversion process is by which first-time personal computer users shuck off their numbing ignorance of the technology and fly high the banner of computerism.

I thought it useful to share some empirically derived thoughts about this subject in the hope that an increased awareness of such transitions will help your dealings with the user establishment.

Here are the stages of the process that I have identified:

■ *Stage 1: Wonderment.* Many industry followers suggest that a large number of new users suffer violent mental agonies — cyberphobia — as they begin to approach the subject of automation, with the obvious implication that systems analysts or trainers require near-Freudian capabilities to deal with such users. I believe that the number of new users with deep-rooted psychological problems with computers is very small, in spite of all the media hype to the contrary.

I think the situation is much less complex: The vast majority simply wonder how automation will improve their lot in life and, given the opportunity to become users, whether they will do well and perform well on the job. The psychological situation is not terribly different from that which results from other major changes in one's career, such as obtaining one's first job or becoming a manager for the first time.

However, users are psychologically vulnerable during this period and are unduly influenced by what they experience. Machine breakdowns, boring instruction, abstruse systems documentation and irrelevant applications tend to lessen confidence in users' abilities to cope and interest in moving ahead. It's most important that new users work with soundly designed systems in this stage, otherwise their desires to pursue an automation program will diminish, and their dealings with the DP community will be strained.

■ *Stage 2: Enlightenment.* As a sometime trainer of users, it is no less than a thrilling event when my students succeed at the simplest of DP chores, like printing out their first word processing documents or observing the results on the monitor from their first data base queries. Expressions like "This is fantastic!" and "I can't believe it!" permeate the classroom and give a terrific boost to all the students, giving rise to stronger beliefs in themselves and their expectations of meeting the training challenge.

For this and other reasons, I believe that the early phases of user training, both in the classroom and on the job, should emphasize personal achievement and not notions of fancy advanced technology. In literacy training, the impact on the student of presentations of highfalutin advanced technology — like movies of global command and control systems — is negligible compared with the victory of a first-time paragraph move during a hands-on word processing exercise. For this purpose, the personal computer is ideal, because it provides a total systems environment under complete control of the student.

■ *Stage 3: Achievement.* The conversion process is complete when new users see output that directly relates to their jobs pour out of a machine — power on the premises, as it were. They are exhilarated, if not heady, by the obvious productivity gains inherent in well-designed systems, and many are positively giddy about prospects for the future. Continuing achievements lead to a growing systems "maturity" and independence.

However, for some users, this results in misplaced beliefs that they can do completely without the data processing department. For this reason, at some point during this stage, DPers should step in with a program — seminar, briefing, whatever — to bring users into the arena of production systems, sobering them up with notions that they never considered before and steering the user maturation process toward more realistic goals. ‡

Letters to Stone should be addressed to him at P.O. Box 33699, Washington, D.C. 20033.

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VIEWPOINT

Mid-range computer market here to stay

Regarding Charles P. Lecht's article "U.S. computer industry: 1984" [CW, Jan. 9], I think Lecht's crystal ball needs some Windex. Perhaps the following considerations will help.

Concerning supercomputers, current designs are not "really high-powered stuff," which is why the market for such devices remains relatively small: Most installations are unable to make cost-effective use of array processing architectures. What is needed in most superlarge installations are parallel architectures that are not dependent upon data homogeneity. We will see more solutions to this: The marketplace demands it. However, they may not look very much like supercomputers; they may, in fact, look very distributed data processing-like.

The mid-range computer market is very definitely here to stay. Corporate users want to model all their business activities in their information systems. One particularly effective way of doing that is to provide appropriate information processing power at each corporate level. As long as vendors can provide cost-effective mid-range machines, users will find many places in their organizations where they can be put to profitable use.

It is not that "the advantages of centralized data processing will be rediscovered," since we never lost sight of them. What is true is that we have not yet paid enough attention to the advantages of making form follow function and making capacities match responsibilities.

I sincerely doubt that we will end up with a world in which anything less than a mainframe will eventually "metamorphoize into the dumbest terminals possible." Instead, I see an ever-expanding profusion of novel devices designed to solve various aspects of the problem of getting computers to communicate with people on mutually agreeable terms.

Here to stay

Anyone who says that programming is going to disappear betrays a lack of understanding of what programming is all about. Programming is the art of finding a solution to a problem by effectively applying whatever tools are available. As long as there are problems to be solved and tools to solve them, programming is here to stay.

The question to be asked is: "Who can best program the solution to a particular problem?" The answer is that a solution requires:

- A clear, urgent, experiential understanding of the problem.
- Familiarity with the capabilities of the tools.
- An adequate distribution/implementation/support system.

It may well be that no single organization has the three requisites to solve the problem, in which case a cooperative agreement must be worked out. Since the motivation for solving the problem ultimately rests on the one experiencing the problem, my suggestion is that users become more aggressive in actively creating such agreements with vendors.

I agree that users do not want to reprogram a problem that has already been solved. But they will be forced to as long as they rely upon in-house software development. This appears necessary in the current environment because independent software vendors as a group do not manifest adequate stability. The reason for this is that copyright, patent and trade-secret laws remain ambiguous with respect to software. The software industry's growth will remain stunted and deformed until its product is adequately protected.

The issue of the use of nat-

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VIEWPOINT

ural language to communicate with computers is an extremely complex one, because the communication process is one of the most difficult tasks people must perform daily.

We do it so often we take it for granted, but with computers we cannot.

I would characterize communication as a trial-and-error process in which the sender of a message attempts:

- To identify the audience.
- To attract the attention of the audience.
- To instill curiosity in the audience, making it receptive to the message.
- To transmit his message using a syntax and vocabulary understandable to the audience.
- To test if the message was correctly received and is being acted upon.

Since communication problems manifest themselves in decidedly different ways in computers vis-a-vis people, it is not at all obvious that we want to communicate with them in the same casual manner that we communicate with people. In fact, even among people, we often restrict the communication process to minimize ambiguity (for example, printed forms, style and size restrictions on memos, contracts in writing and so on).

I am not saying that we will not continue to make computer interfaces more English-like and to use dialogs where appropriate, including vocal input and response units. What I am saying is that language restrictions are inherent in the communications process and will never go away; not in 1984, not ever.

Any discussion of computer interfaces in 1984 and beyond would be grossly incomplete without mentioning that the use of menus and windows in combination with various pointing devices will continue to prove to be extremely popular and cost-effective in many computer interface designs. Graphics will also increase in popularity as costs diminish and interfaces become more convenient.

Putting things in perspective, I would have to say that there will never be a time when Cobol will go away, to be replaced by apparently unrestricted English. We will continue to want a rich interface environment in which programming languages and natural-looking query and command languages will each have a small but significant part.

Lobbying efforts

I strongly disagree with Lecht that the thrust of lobbying efforts by American electronics companies is or will be "to prevent the sale of Japanese electronics in the U.S." Instead, I see the thrust of lobbying actively as being to arrange appropriate financial and legal support for advanced basic electronics research in this country.

What could we possibly gain from preventing Japanese sales here? The market is a global one, and restrictive U.S. laws cannot hope to do anything but remove the U.S. from participation in it. (If I want to buy Japanese components and U.S. law says I cannot, then I will buy them in Hong Kong, Singapore or Taiwan and move my assembly operation there.)

I think Lecht needs to get out of his think tank a little more often and see what real users' real problems are and what real vendors are really doing to address those problems. As IBM has proven for years, users are not impressed with the latest technology; they want their problems solved. When in doubt, seeing things from a more global perspective practically always enhances clarity. ‡

Wallis is advisory software engineer, software development, at National Advanced Systems in Mountain View, Calif.

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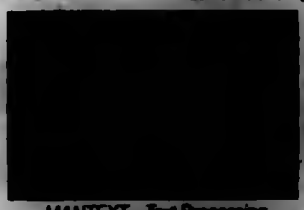

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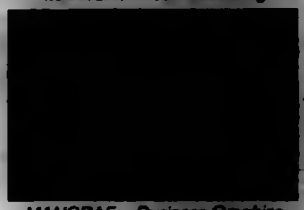

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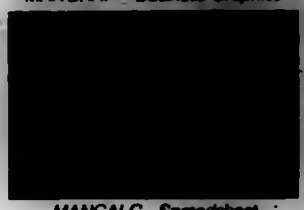

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SOFTWARE & SERVICES

Will Teradata revive a market?

SOFTALK

PAUL GILLIN
CW Senior Editor

Just when many software observers were ready to perform last rites over the data base machine market, Teradata Corp. surprised us last month by announcing a large-scale data base machine capable of handling trillion-byte data bases at speeds of up to 400 million instruction per sec (Mips). In an unusual departure from tradition, the company also announced that it had already installed about a dozen of its DBC/1012 machines in large DP shops.

The announcement will, no doubt, enliven the discussion that has persisted for the last three years about the viability of this intriguing, but so far unpopular technology. Since Britton Lee, Inc. announced the first commercially available dedicated data base processor in 1980, only a few vendors have ventured into the market. With the exception of Intel Corp., none of them are household names.

Vendors are understandably skittish about IBM's unpredictable pricing policies and improvements in hardware price/performance in general. In the large-scale data base machine market, "hardware cost won't be a factor. The important thing will be the performance of the relational model data base," said Vincent Ruzzino, manager of new product development at Data Decisions, Inc. in Cherry Hill, N.J.

IBM made that distinction clear last year when it announced DB2, its relational data base management system (DBMS) for IBM MVS installations. DB2 works as an adjunct to IBM's IMS DBMS and requires a copy of the production data. The implicit message was that large shops will be willing to pay the hardware price in order simply to get data to their users in a usable fashion.

However, Teradata appears to have covered many of the criticisms leveled at data base machines. The company has

See DBMS page 46

University launches 'Turing'

Language boasts modular programming techniques

By John Gallant
CW Staff

TORONTO — A member of a University of Toronto research team that recently developed a new general-purpose programming language may one day be a very wealthy man.

"Sure, I might get rich," Richard Holt laughed. "I think we stand to make a great deal of money from this. But we try to think of ourselves like Beethoven enriching the world with his music rather than like Mick Jagger just making money."

Chairman of the university's Computer Systems Research Group, Holt joined forces in 1982 with fellow computer science professors Jim Cordy and J.N.P. Hume to develop the Turing computer language, named in honor of British mathematician and computer theorist Alan Turing. The Turing language, according to Holt, is simpler than Basic, more powerful and elegant than either Pascal or PL/I and offers debugging, portability and modular programming capabilities that outstrip all three.

Turing was born out of an intensive one-year development effort and is currently being used and studied by some 3,000 University of Toronto computer science students. A textbook on the language is being marketed through the Association for Computing Machinery, according to Holt.

The Computer Systems Research Group last month began marketing a Turing compiler for Digital Equipment Corp.'s VAX-11 superminis under Version 4.2 of Unix. Compilers for IBM 370 processors and the IBM Personal Computer are slated for release in the near future.

Not yet for business

As a general-purpose language, Holt said, Turing is useful for basic data processing, microcomputer and scientific applications, as well as for programming that involves data structures and link lists.

In its current form, however, the language is not designed for large, business-oriented DP shops. "It's not as good as Cobol for large file processing applications or for those applications that utilize dollar-type scaled integers," Holt admitted.

"You could use it and it would be better than Basic or Pascal, but whether you could convince people with a large invest-

See TURING page 46

SOFTLINE/THOMAS O'FLAHERTY

Needs of the '80s will alter training

First in a two-part series

In many organizations, a "programmer trainee" is considered at best a necessary evil and at worst a lower form of life. This is in spite of the many desirable traits of trainees. These include few ego problems, willingness to work for low salaries, few technical bad habits, potential for several promotions, high probability of loyalty to the firm and willingness to work hard.

Many "experienced" programmers not only lack these characteristics, but also often overvalue their obsolescent skills. Trainees are traditionally unpopular because they:

- Can't start programming on Monday.
- Require training overhead (the trainee's own time plus the time of experienced staff).
- May have no interest in, or potential for, the work.
- May leave the firm as soon as the training is over.

These are real issues. Dealing effectively with the first two issues requires a planning process that is adhered to. Weeding out those with no interest or aptitude means avoiding taking trainees right off the street and putting them into

See TRAIN page 46

Adesse packages for VM updated/45

ETA

IDMS gets planning and development tool/45

INSIDE

Systems Software/45
Productivity Aids/46
Application Packages/46
DBMS/47
Languages/47
On-Line Data Bases/48

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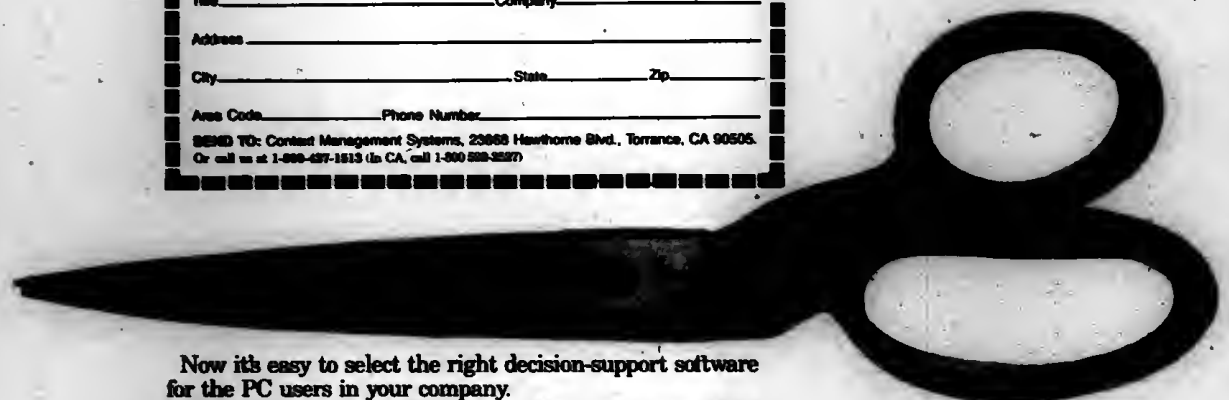

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Adesse enhances packages for VM operating system

The Adesse Corp. has announced a series of enhancements and updated releases of its software packages for use with IBM operating systems.

Adesse announced Release 1.3 of its CMS Read/Write OS Dasd (Direct Access Storage Device) Support system, which incorporates support for IBM's CMS/SP Release 3 operating system. The system reportedly permits a CMS application to write files on IBM OS-format disks. It can be used to write on disks that are also used by IBM's OS, VS or DOS operating systems as a means of transferring data.

In addition, Adesse announced that its VM/SP Enhanced Page Migration (EPM) system is now supported in IBM multiprocessing or dyadic processing environments under VM/SP Release 3 and Release 3. EPM also supports Release 3.2 of IBM's VM/SP High-Performance Option.

Adesse also announced its VM/SP Shared File Directory Facility (SFDF), which reportedly eliminates duplicate storage associated with read-only CMS disks by permitting one copy of the File Status Table entries for a disk to be shared by all users who access it. Also, the firm announced the Single System Image (SSI) control program for use with Release 3 of VM/SP.

The system is said to manage the resources of IBM and compatible 370, 4300 and 30 series system complexes to provide multiple users with virtual machine facilities. According to the vendor, SSI is a comprehensive facility that allows several VM processors to appear to the user community as a single CPU.

CMS Read/Write OS Dasd Support is licensed for $150/mo per CPU or can be purchased for $5,000; EPM is licensed for $350/mo and can be purchased for $9,000; SFDF is licensed for $100/mo and can be purchased for $1,900; and SSI is licensed for $4,500/mo and can be purchased for $100,000.

Adesse can be reached through P.O. Box 607, Ridgefield, Conn. 06877.

SYSTEMS SOFTWARE

HOLLAND SYSTEMS CORP.
SSP Version 2.4

Holland Systems Corp. has released an enhanced version of the software portion of its information resource management product.

Version 2.4 of Strategic Systems Planning (SSP) includes an additional 18 reports, automates the development of an information requirement dictionary and enhances the error-checking process during data entry, a spokesman said. It reportedly provides improved user control of the clustering threshold used in defining the information structure.

SSP runs on IBM or IBM-compatible mainframes under IBM's OS/MVS operating system. SSP Version 2.4, including software, method, education and documentation, is priced at $80,000.

Holland Systems, 3131 S. State St., Ann Arbor, Mich. 48104.

NORTH AMERICAN SOFTWARE
Jobqueues

North American Software has announced Jobqueues, a multiple job queue package for the IBM System/34 and System/36.

According to the vendor, Jobqueues boosts IBM's JOBQ function throughput in a mixed job environment, such as IBM's Mapics (Manufacturing, Accounting and Production Information Control System) and DFAS-II (Distributed Financial Accounting System).

Jobqueues was designed to conform to IBM syntax and screen-handling techniques. Suitable for any JOBQ job, the system features job-conflict resolution, four-level security, power-fail restart, performance testing and automatic Operator Control Language conversion. It is priced at $495.

North American Software, P.O. Box 440398, Denver, Colo. 80014.

PRODUCTIVITY AIDS

OXFORD SOFTWARE CORP.
UFO, Maxicalc price changes

Oxford Software Corp. has announced price changes for its product line.

User Files On-Line (UFO) is an on-line application development system for IBM CICS and IMS/DC environments. For UFO/CICS, the new prices are $27,000 for IBM's DOS operating system and $38,000 for IBM's OS operating system.

Prices for Maxicalc, an electronic spreadsheet for CICS environments, are reduced to $9,000 for DOS and $12,000 for OS.

UFO/Cobol is an on-line CICS application development system that uses standard Ansi Cobol as its development language. The DOS price is $24,000, and the OS price is $33,000. Until April, introductory prices are $18,000 and $24,750.

Oxford Software, 174 Boulevard, Hasbrouck Heights, N.J. 07604.

APPLICATION PACKAGES

DATA DESIGN ASSOCIATES, INC.
Accounts payable enhancement

Data Design Associates, Inc. has announced an enhancement to its accounts payable system for mainframes and large minicomputers.

According to the vendor, the system now helps companies comply with the backup withholding and reporting provisions of the Interest and Dividends Tax Compliance Act of 1983. The system recognizes when withholding should occur and automatically calculates and deducts the proper amount from a vendor's invoice. It is written in Cobol.

An on-line version is available for IBM mainframes and large minicomputers, and a batch version is available for all major mainframes. The system sells for $35,000 to $53,000.

Data Design Associates, 1279 Oakmead Pkwy., Sunnyvale, Calif. 94086.

DISTINCTIVE SOLUTIONS CORP.
Commercial Finance System CFS/3000

Distinctive Solutions Corp. has announced an interactive, modularly designed system for processing and monitoring commercial finance instruments, such as revolving loans, commercial loans and leases.

Commercial Finance System CFS/3000 is designed to operate on the Hewlett-Packard Co. HP 3000 superminicomputer and is available now.

It is said to allow input through menu selections or fill-in-the-blanks forms, with an on-line Help system intended to reduce errors.

The price depends on the number and type of modules ordered, with minimum packages costing $100,000.

Distinctive Solutions, 1305 Marsh St., San Luis Obispo, Calif. 93401.

See TOOLS page 47

Release 3.0 of DBDM out

ETA International, Inc. has announced Release 3.0 of its Data Based Development Methodology (DBDM), which is described as a systems planning and development methodology for use with Cullinet Software, Inc.'s IDMS, Integrated Data Dictionary and ADS/On-Line software.

DBDM provides detailed standards, procedures, controls and deliverables necessary to implement projects in data base, data communications and data dictionary environments. It reportedly consists of modules that support the planning, analysis, design and implementation of data-based development.

The DBDM modules include business systems planning for business and MIS, business function analysis, logical data base definition, program definition for data-based systems, physical data base design and data base implementation guidelines.

DBDM is licensed for $18,000, including the six primary modules, all supplemental modules and five days of customized on-site workshops.

ETA International, Seven Wells Ave., Newton, Mass. 02159.

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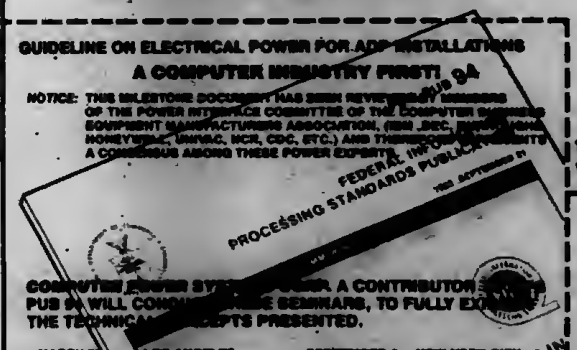

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TRAIN from page 43

a programming job.

The problem of "training a programmer for someone else" is the heart of the rational opposition to using trainees. Trainees do leave, but for the same reasons as other employees. Input, Inc.'s research indicates that the primary reasons for turnover in technical positions in the information systems department are:

- Lack of opportunity to learn or to work on challenging projects.
- A nonsupportive management structure.
- Obsolescent technology.
- Nonexistent or unclear career paths.

Unfortunately, all of these problems are often the direct result of training programs. In many trainee programs, it is apparent that management doesn't really know what to do with trainees. Usually there is an initial solid block of training that goes on for weeks. This is far too much to be absorbed at one stretch, especially when much of it is not (and cannot be) put to immediate use. Often, formal education is very hard to come by after the initial period — even when it is desperately needed.

After the block of formal education, trainees are often placed in the most difficult (and usually least rewarding) job in the information system department: maintenance. They are often assigned to a job and/or supervisor that knowledgeable employees successfully avoid.

The consequence of this classroom-maintenance sequence is that after a year, the trainee:

- Does not have a very broad perspective of data processing.
- Has picked up knowledge that is usually obsolescent and often wrong.
- Has done, at best, a mediocre job (the brighter trainees will be aware of this).

With an experience that ranges from unsatisfying to disagreeable, is it any wonder that trainees would look to other organizations for employment?

Why are so many training programs like this? Our research indicates that this is because so many trainees are hired in an unplanned fashion.

Let's take a look at hiring patterns before the recent economic crunch. Looking at a broad sample of corporations, over 40% of hirings were for new positions created by growth. However, companies generally wanted to fill 80% of their openings with experienced people. This is mathematically impossible. Consequently, actual trainee hirings track the numbers of new positions very closely.

This is a game of musical chairs; instead of chairs being subtracted, they are added. New recruits are hurriedly found, but not planned for and not really wanted.

Information systems departments should face mathematical reality and plan to hire trainees regularly. This will be much easier to do if information systems management believes that trainees have the potential for becoming superior employees. Effective training programs are needed to make this potential a reality.

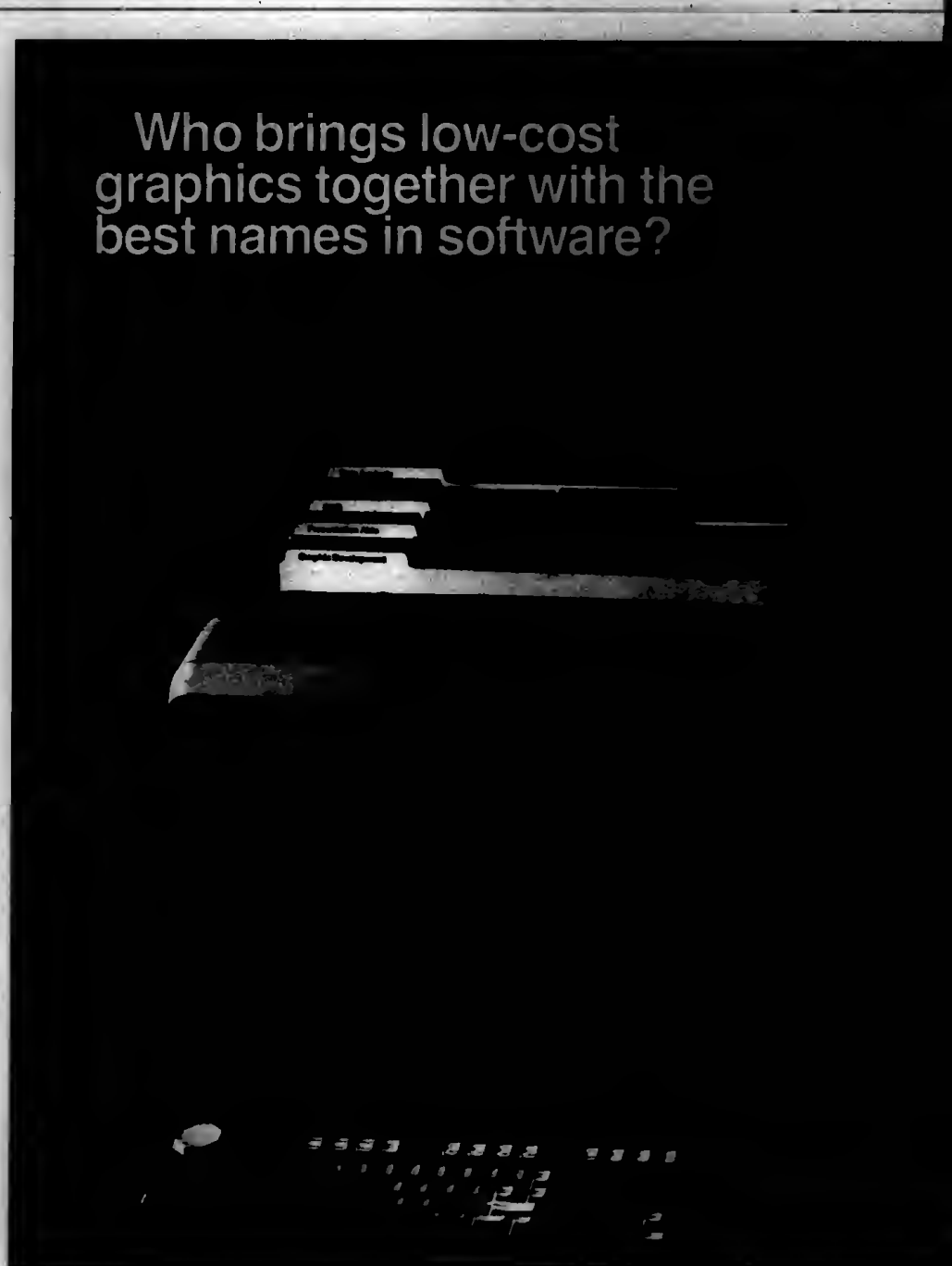
The new system environment will require, besides technical skills, aptitude in systems analysis and interpersonal relations and a knowledge of underlying business issues. This suggests that future trainees will have more diverse backgrounds than trainees now usually have.

Whatever the eventual structure of data processing, it will continue to need skilled people. Effective training will have at least as large a potential payoff in the future as it does now.

A successful training program will have these components:

- Both the organization and the trainee feel that the trainee is making a tangible contribution to the organization very early in the trainee's career.
- The trainee receives textbook knowledge in the amounts required and at an appropriate time.
- Trainees have a positive view toward their job and the organization from the start.
- Trainees stay with the organization.

O'Flaherty is principal consultant and director of software programs at Input, Inc., a research and consulting firm in Saddle Brook, N.J.



SOFTWARE & SERVICES

TOOLS from page 45

CYBORG SYSTEMS, INC.
Payroll; Human Resource Management

Cyborg Systems, Inc. has announced that its Payroll and Human Resource Management packages are now available for use in the IBM IMS DB/DC environment.

According to a company spokesman, standard IMS utilities may be used for backup and recovery.

One feature is said to be the ability to create new on-line screens within the Cyborg program, bypassing the Message Format Services of IMS for immediate use without recompiling programs.

The IMS feature is priced at $50,000.

The base price for the Payroll package is $45,000, while the Human Resources Management package is $35,000.

Cyborg Systems, 2 N. Riverside Plaza, Chicago, Ill. 60606.

DATA BASE MANAGEMENT SERVICES

JCA SOFTWARE, INC.
Sort-On-Line

JCA Software, Inc. has announced a software system said to provide an on-line sorting capability in the Cullinet Software, Inc. IDMS/DC data base management system environment.

Sort-On-Line (SOL) reportedly improves the ability of IDMS users to obtain information from the data base in sequences that are different from the way in which the data was originally stored.

The on-line sorting capability also works for Scratch, Queue and Table records, the vendor said.

SOL enables the end user to specify dynamically the sort sequence desired at the moment without need for program definition by a programmer, according to the vendor.

The product is fully compatible with Cobol, PL/I and Cullinet's Application Development System/On-line programs, the vendor said.

A license fee for SOL costs $10,000.

JCA Software, Suite 224, 2132 Dupont Drive, Irvine, Calif. 92715.

LANGUAGES

WHITESMITHS LTD.
C/370

Whitesmiths Ltd. has announced C/370, said to be a C language compiler for the IBM 370 mainframe architecture.

A vendor spokesman said C/370 permits C program development in the IBM mainframe environment and allows Digital Equipment Corp. VAX-11 users to move existing C and Unix applications to the IBM 370 architecture through recompiling and relinking.

The standard C/370 package includes Whitesmiths' Pascal-to-C translator, which reportedly gives users the ability to run Pascal programs in the 370 environment as well.

The spokesman said C/370 is a full implementation of the standard C language. It runs on all IBM 370, 4300 and 30 series and plug-compatible mainframe systems. It also operates with IBM's VM/CMS, through OS simulation and MVS/TSO, the vendor said.

C/370 is priced at $4,000 until March 30 and $5,000 after that date, according to the vendor.

Whitesmiths, 97 Lowell Road, Concord, Mass. 01742.

Tektronix.

No graphics terminals connect you to better utility or applications software, or with a broader range of computers, than Tek's desktop 4100 Series terminals.

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DBMS from page 43

provided an IBM SQL look-alike query language that takes dead aim at IBM's decision to use SQL as a front-end language to DB2. Furthermore, Teradata claims to use a "true" relational DBMS combined with a processing architecture "built to support the relational model," according to Michael Ehrensberger, Teradata's eastern regional manager.

Teradata doesn't expect its data base approach to replace IMS or any other product DBMS soon. "Companies have a lot of money invested in their IMS data base, and we'd be foolish to expect they're going to give it up for our model," Ehrensberger said. But the company expects that growing information center requirements and the corresponding demand for relational processing will push companies to seek a more efficient way to process data for end users. In fact, part of the company's documentation offers guidelines for which applications are best offered on DBC/1012 and which are best left to IMS.

DBC/1012 uses Intel 8086 microprocessors, called Access Module Processors (AMP) running in parallel and controlled by Teradata's Ynet network processor, which consists of an array of active logic. Each processor has a dedicated 475M-byte Winchester disk drive with the data distributed evenly among the drives.

Requests are translated and distributed by an interface processor and sent to the AMPs, which access the data in parallel. Responses are transmitted over Ynet and coordinated and translated by the interface processor for return to the mainframe over a block multiplexer pipeline. Each processor can perform 30 access/sec, making a total access rate of over 30,000 access/sec achievable in the largest configuration.

Teradata has also challenged the IBM price umbrella. Storage can be added at the rate of $37 per megabyte, and horsepower can be increased at a cost of $60,000 per Mips.

In designing DBC/1012, Teradata employed the advice of 18 Fortune 500 companies over a 2½-year period to design the system in an agreement it calls the Partner Program. The companies provided input at each step of the design process in exchange for a discount on DBC/1012. Teradata claims to have letters of intent to purchase from nearly every member of the Partner Program.

The company faces an uphill struggle, however. The DP community is clearly skeptical of data base machines in light of their poor market performance to date. Teradata must also face up to the formidable disadvantage of not being IBM. Few companies will be eager to sink one million dollars or more in a complex system from a company that may not be around to support it in the future. It's easier to license DB2 for $30,000 a year and get the peace of mind of knowing it will always be supported.

Teradata expects to be profitable by the end of the year, and it will be worth watching to see if it achieves its objectives. If so, the company may open a door which many in the industry thought was fast closing.

ON-LINE DATA BASES

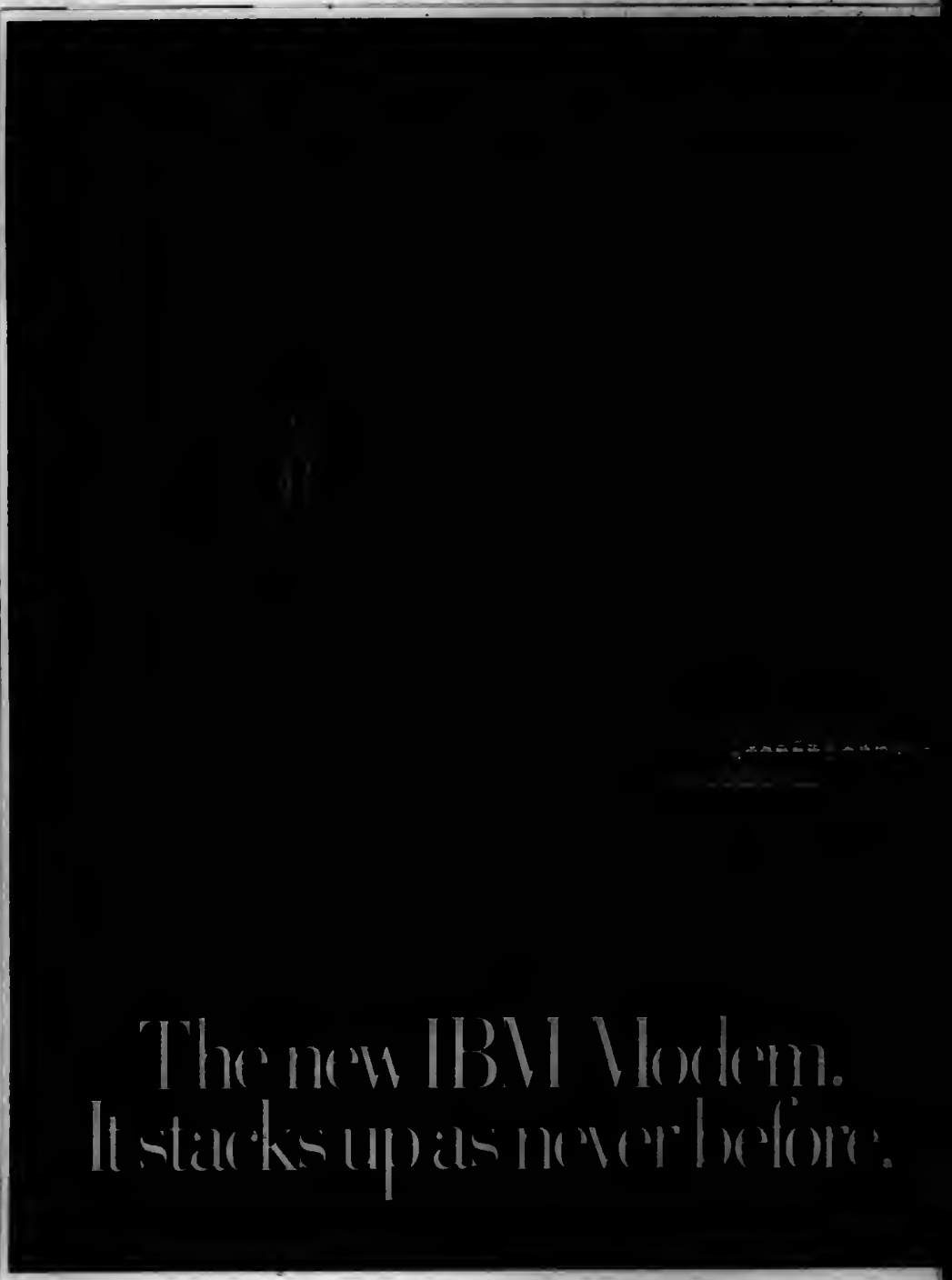
DOW JONES & CO., INC.
Dow Jones News/Retrieval via Net 1000

Dow Jones & Co., Inc. has announced that its Dow Jones News/Retrieval business and financial information service is available through AT&T Information Systems, Inc.'s Net 1000 shared network service.

The Dow Jones News/Retrieval service provides users with business and economic news, securities quotes, financial and investment services and general news through its 27 data bases.

The service is offered through two pricing plans, both of which include a $75 sign-up fee. The standard pricing plan prices vary between 60 cents and $1.20 per connect minute. The executive pricing plan prices, which include a $50 monthly fee per user site, range between 40 cents and 80 cents per connect minute.

Dow Jones & Co., P.O. Box 300, Princeton, N.J. 08540.



TURING from page 43

ment in Cobol to switch is another matter entirely."

Holt said that inadequacies in PL/I and Pascal provided the impetus for the development of Turing. "We wanted to be able to use and teach the state of the art in software, which essentially left us the choice of PL/I and Pascal. PL/I had a lot of the power and Pascal had a lot of the elegance we wanted, but those systems don't incorporate many of the things that have been learned in the last decade."

Perhaps the most important advances those languages fail to utilize, he said, are modular programming techniques that allow a programmer to isolate one or more segments — or modules — of a code from the rest of the program.

The modules accommodate a building-block approach to system design and maintenance, an approach that ensures accuracy and flexibility, Holt said.

"We wanted a language that was easier to use than Basic, and I think we accomplished that," Holt said. "It has a very simple, clean syntax. You write down what you want done, and the language does it. That's different from Pascal or PL/1. [Turing] reads much like a simplified version of Pascal, yet it's more powerful, and it leaves behind the syntactic frills of Pascal. You have procedures that appear similar to Pascal procedures, but they are shorter and simpler."

Holt said the structured Turing language incorporates sophisticated debugging techniques, such as consistency checking, that ensure program accuracy. "There are many things that other languages allow that simply don't make sense. But Turing has built in, from an engineering standpoint, many features that minimize the number of errors that show up in your production program," he said.

No 'lurking bugs'

"The result is that when you first get your program running, it's correct. You don't have a whole series of lurking bugs that show up days, weeks or even months later," Holt added.

Turing has been well received by Holt's peers in the academic community, but the development group now faces the task of building a commercial user base. "We are hoping that people will see that this language is on the leading edge in software design.

"Most people who have seen it come away saying that it is. Turing is clearly better, but whether people with a large investment in other languages will convert is the real question. I believe that's a real possibility."

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COMMUNICATIONS

Nacha offers paperless trade system

By Patricia Keefe
CW Staff

WASHINGTON, D.C. — A system that electronically replaces the paper checks used in processing debits and credits between participating companies and their trading partners has been unveiled by the National Automated Clearing House Association (Nacha).

Corporate trade payments (CTP) are transmitted via any of 30 automated clearinghouse (ACH) networks, which provide a telecommunications link between banks, savings and loan associations and credit unions. The network reportedly replaces a total of 400 million checks annually.

Most of the regional automated clearinghouses utilize the clearing facilities, delivery methods and settlement services operated by the Federal Reserve System, although some utilize private processing facilities as well. Each clearinghouse is responsible for forming membership policies, pricing structures and the operating policies within its own region. Nacha establishes and maintains rules governing the exchange of automated clearinghouse payments between clearinghouse regions, as well as providing standards and technical support facilitating the same.

Nacha conducted a study in 1981 to determine whether development of electronic CTPs was warranted, and whether it was feasible to send those payments through the ACH. Study results included:

- Each of the corporations indicated interest in sending trade payments through the automated clearinghouse regardless of their level of automation.
- Forty-four percent of the corporations were involved in a net settlement system within their industry.
- The number of financial institutions with which they had accounts ranged from one to 90 on the accounts receivable side, with an average of 22 banks, and one to 50 on the payment disbursement side, with an average of 17. All of the corporations indicated the majority of their trad-

See NACHA page 53

Confusion follows divestiture
Companies report service problems

By John Dix
CW Staff

"Genuine, legitimate and honest confusion" is how one communications manager contacted in a recent informal telephone survey summed up operating conditions in the environment created by the AT&T divestiture.

Each company queried related some dissatisfaction with the quality of service they have been receiving from the regional telephone holding companies and AT&T since they were separated on Jan. 1. The degree of dissatisfaction ranged from simple annoyance at having to work with new contacts within the carrier organizations to disgust with the inability of those companies to complete even modest requests.

In preparation for the divestiture, Bank of America forecast that quality of service would drop and tried to establish . . . tactical plans around that fact.

J. F. Sheedy, manager of network services for International Harvester Co. in Chicago, said there has been a noticeable lag in service and in getting things repaired, but that the company has been able to operate on a relatively even keel. Sheedy credits Harvester's stability to the fact that the company isn't in the midst of any major communications projects and that it uses communications equipment from many vendors.

There have been some problems, however. In the worst case, a disconnect order was issued for four Wats lines at a Harvester facility in Memphis, Tenn. "The order got bungled between AT&T and [Southwestern Bell Corp.]," Sheedy said, "and instead of taking down four lines, all 15 Wats lines at that location were disconnected." Service on all but two of the lines was restored within six hours, and the others were repaired the next day.

Sheedy said that in most other instances Harvester has had little problem getting business and Wats lines installed, but has experienced trouble in getting lines repaired. "There are more steps to go through now," Sheedy said, and "when you call a [regional holding company] with a problem, you often get shuffled around, and sometimes they have trouble finding your records."

The one major equipment delay that Harvester has experienced was in Fort Wayne, Ind. Sheedy said that AT&T Information Systems, Inc. reported that it will not be able to meet a delivery schedule for a Dimension System 85 that was to replace a Centrex-customer premise site, supported by non-AT&T General Telephone, the local telephone company. Sheedy is uncertain if the delay stemmed from divestiture or if AT&T is behind schedule in the construction of this new digital private branch exchange.

At Bank of America in San Francisco, Lloyd Isaacs, vice-president of international information technologies, reported that he has experienced increased lead times for line facilities and equipment. But that has not come as a surprise.

In preparation for the divestiture, Bank of America forecast that quality of service would drop and tried to establish two-, three- and four-year tactical plans around that fact.

In day-to-day operation, Isaacs said, "the placing and processing of orders has become confusing and time-consuming." He believes that one of the primary tasks at hand is to try to establish a working relationship with the splintered pieces of the Bell system. As he pointed out, there are regulated and nonregulated subsidiaries of the regional holding companies to deal with, as well as the similiar delineation at AT&T between AT&T Information Systems

See DIVEST page 53

AT&T

AT&T published an X.25 interface technical reference/53

MCI offers electronic mail access to telex subscribers/51

INSIDE

Communications Controllers/51
Voice/Data Communications/51
Auxiliary Equipment/51

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COMMUNICATIONS

COMMUNICATIONS CONTROLLERS

PROTOCOL COMPUTERS, INC.
CPT 8276 SNA controller; Wordplex converter

Protocol Computers, Inc. has announced two products that provide IBM compatibility — the CPT 8276 SNA controller and the Wordplex converter.

The CPT 8276 SNA controller enables CPT Corp.'s word and data processing systems to communicate with IBM host computers. The product allows seven devices to be linked to an IBM network utilizing IBM's System Network Architecture (SNA). The workstations can be linked directly to the IBM network or can utilize dial-in capabilities, such as the ability to store data locally or to word process documents with the CPT terminal and then transfer the data to the IBM host for electronic mail or other processing purposes, the vendor said. The price is $7,000.

The Wordplex converter enables Wordplex Corp.'s workstations to communicate with IBM host computers. The workstations can be linked directly to an IBM network or can utilize dial-in capabilities for low-volume applications, the vendor said.

The converter is available in 1-, 3-, 5- and 7-port configurations. Prices are $2,900, $3,900, $4,900 and $5,600, respectively.

Protocol Computers, 6150 Canoga Ave., Woodland Hills, Calif. 91367.

VOICE/DATA COMMUNICATIONS

TIMEPLEX, INC.
Voice option for Link/1

Timeplex, Inc. has announced a voice digitizing option for the company's Link/1, the T-1 facilities management system.

The option enables up to 48 analog voice channels operating at 32K bit/sec to be digitized and multiplexed over a T-1 line operating at 1.54M bit/sec.

The option is offered in multiples of four voice channels, the vendor said.

Voice modules may be mixed in any proportion with the four-port synchronous data card with the Link/1, according to a company spokesman.

The voice option is priced at $3,550.

Timeplex, 400 Chestnut Ridge Road, Woodcliff Lake, N.J. 07675.

AUXILIARY EQUIPMENT

INTERNATIONAL RECORD CARRIER, INC.
Supertelex

International Record Carrier, Inc. (IRC) has introduced Supertelex, an international telex service available to North American customers.

IRC transmits worldwide via its London-based computer center. Customers link up to this facility through standard microcomputers or electronic typewriters and telephone lines, according to a spokesman for the vendor. The service reportedly allows shorter transmission time and guarantees 5-min delivery. It also permits customers to edit, update and transmit messages, the vendor said.

According to the vendor, the service is compatible with microcomputers from 26 different manufacturers. Customers receive free-of-charge preprogrammed Supertelex software on floppy disk format.

There is no monthly charge for Supertelex service, according to a company spokesman. International rates vary and are obtainable from the vendor.

IRC, 211 E. 43rd St., New York, N.Y. 10017.

MCI service transmits mail to telex users

WASHINGTON, D.C. — MCI Communications Corp. recently announced MCI Mail Telex Dispatch, a service to transmit electronic mail to telex customers and vice versa.

The service reportedly allows MCI Mail subscribers to transmit messages to telex subscribers worldwide and for telex subscribers to send messages to MCI Mail customers.

MCI Mail customers can send dispatches electronically to telex terminals with charges based on an MCI "mini-ounce," which equals 400 characters, MCI said. Rates vary according to the country of destination. Rates are available on-line to MCI customers.

There is no charge to MCI Mail subscribers for receiving telex messages, according to MCI, 1133 19th St. N.W., Washington, D.C. 20036.

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X.25 reference describes specs

BROOKLYN, N.Y. — AT&T Communications has announced an updated technical reference describing X.25 packet-switching network interface specifications for data systems users and manufacturers.

"X.25 Interface Specifications and Packet-Switching Capabilities" replaces a 1981 issue and describes X.25 features currently supported by AT&T and those considered for support in 1984 and 1985. It costs $37, plus $1 for shipping, and is published by Literary Data Center, Inc.

Literary Data Center, GPO Box C-9104, Brooklyn, N.Y. 11202.

NACHA from page 80

ing partners did have electronic funds transfer capabilities.

■ Data standards were a concern among most of the corporations. Data specifications had to allow for invoice and payment information to flow through the automated clearinghouse.

Also, benefits cited for using corporate trade payments included better cash management controls, improved business relationships due to knowledge of exact day credit or debit, reduction of paper and paper-related costs, more efficient use of personnel, better investment planning and improved speed of business activity.

The technology developed for corporate trade payments is similar to, although more complex than, the systems instituted several years ago to handle the automatic deposit of payroll, pension and social security payments for consumers, Nacha said. Corporate trade payment rules and regulations differ substantially from that of automated clearinghouse consumer payments. For example, corporate trade payments allow payment of multiple invoices with a single transaction. Also, the system was designed with safeguards, such as maximum dollar limitations that must be specified on individual debit entries.

One of the issues that had to be resolved in the development of a viable trade payment system was that of "float" — the interest earned on funds during the time period from which a check is issued until it is actually debited to the account. However, one method some corporations use to eliminate float income, according to Nacha, is through renegotiation payment terms with major trading partners. These new terms might offer higher discounts or extended payment due dates in exchange for electronic payment in immediately usable funds.

With the successful completion of the test phase, Nacha claims it can now offer corporate trade payments to companies of all sizes.

A recent announcement by the U.S. Treasury Department indicating that it will begin making corporate trade payments with some of its trading partners in 1984 is expected to boost the volume of trade payments.

More information is available from Nacha, located at 1120 Connecticut Ave. N.W., Washington, D.C. 20036.

DIVEST from page 80

and AT&T Communications.

"We're going to be faced with 12 to 15 more months of this cloud before these things get sorted out," Isaacs said. In the interim, "decisions are going to have to be made under a greater degree of uncertainty."

This is forcing Bank of America to assume greater responsibility in the management of its communications facilities. As an example, Isaacs said that before divestiture, it had on order with AT&T a large Electrical Tandem Network. Now Pacific Bell Telephone Co. will own the switches, and AT&T will provide the interstate lines. "Whereas we had made the decision to go with a single provider of a network, now the responsibility falls in more than one camp. We have to take on the role of coordinator."

The only equipment delays Bank of America has experienced have resulted from order foul-ups. In one notable instance, Isaacs said that an order was noted as complete when it was not, and it had to be reinitialized.

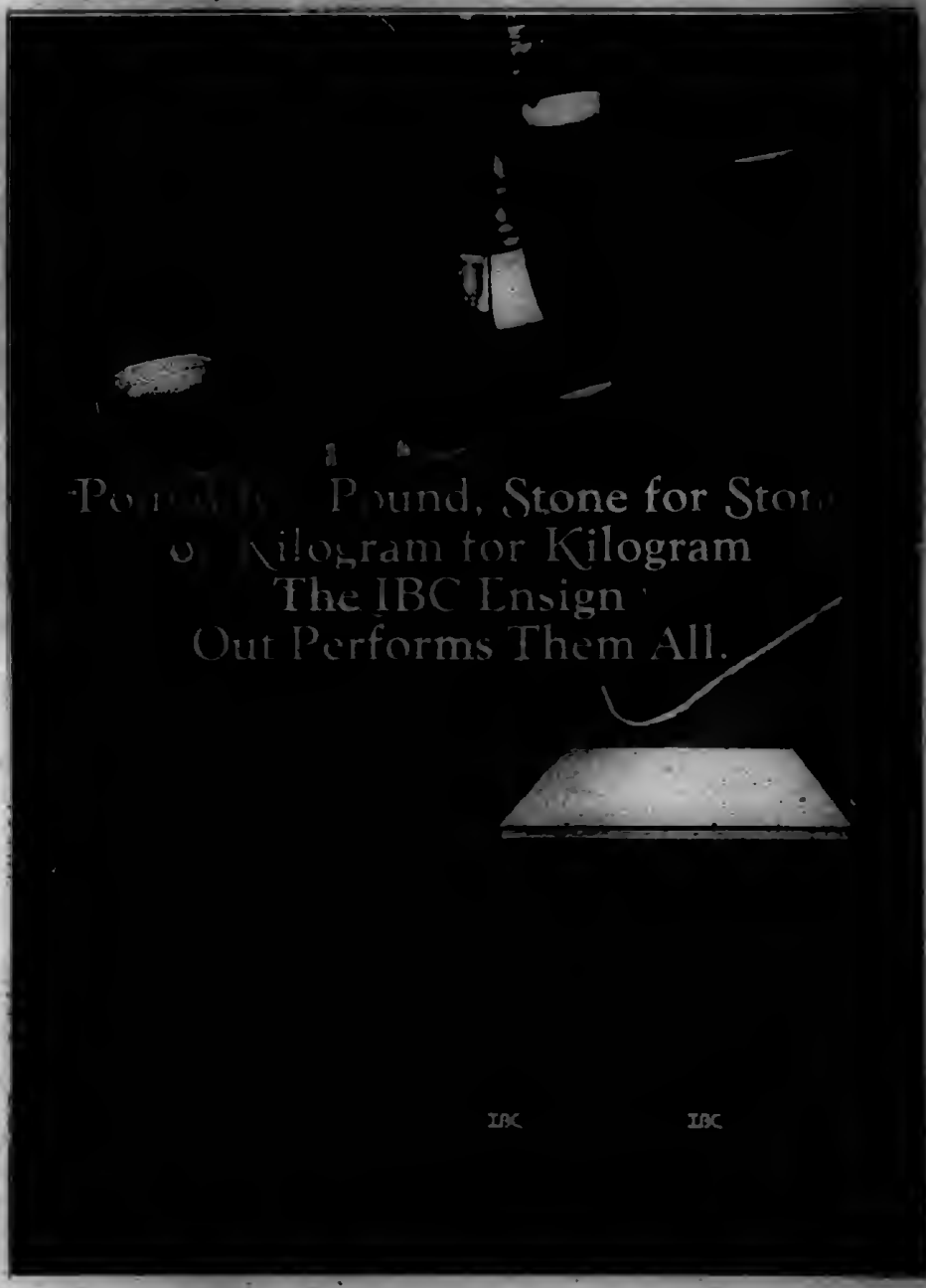
At Colgate-Palmolive Co. in New York City, Manfred Zerbe, director of communications services, said that it will be hard to disappoint his company because it has been anticipating the worst from divestiture.

Colgate's experience in the divested environment has been limited because the company didn't have a backlog of equipment and services. For the few equipment problems the company has experienced, the AT&T Information Systems Customer Service Support Operation provided a single point of contact, relieving Colgate of the responsibility of determining whether the problem was with AT&T Information Systems, AT&T Communications or New York Telephone Co., the communications director reported.

One point of irritation for the company came from the back-ordering of some electronic key systems that AT&T Information Systems said it would deliver in mid-January. More irksome than the actual delay was the fact that this information had to be pried out of the company.

A communications manager at a large Massachusetts company who asked to remain anonymous said that the service his company is receiving is horrendous.

The root of the problem lies in lousy coordination between AT&T and New England Telephone Co., the contact said. "I'm just glad we're not planning any network expansion," he added.



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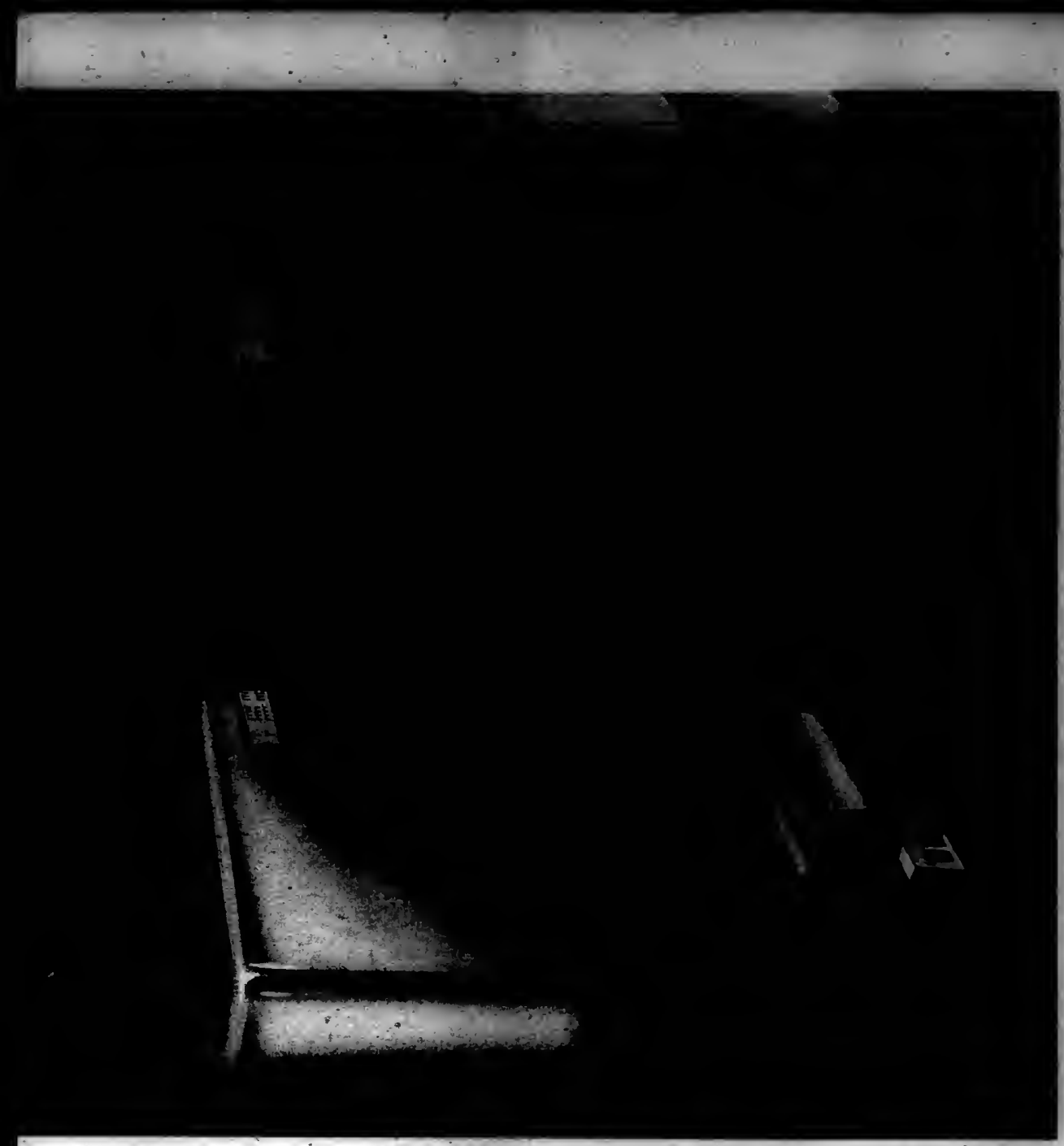

ates contents quickly and easily with electronic files—while reducing the possibility of losing documents. An electronic "Mailbox" allows you to quickly determine which documents to read first. EDC reduces storing and filing costs with an electronic "Archives" that allows for either short- or long-term storage, and the "Wastebasket" which enables you to permanently delete items after a determined period of time. There's even an electronic "Calendar" that checks personal schedules and arranges mutually convenient meetings.

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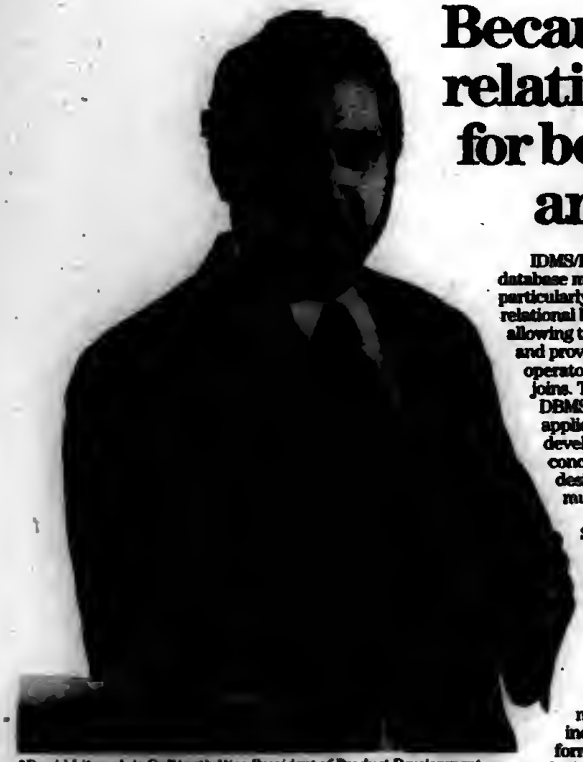

*David Litwack is Cullinet's Vice President of Product Development. Mr. Litwack has contributed significantly to the many technical advances Cullinet has achieved in database software products, including IDMS/R. Mr. Litwack joined Cullinet in 1976. He is a Cum Laude graduate of Brandeis University and holds a Masters in Computer Science from Boston University.

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Atlanta, GA	Mar 28	Knoxville, TN	Mar 28	Oshkosh, WI	Feb 28
Arlington Hts., IL	Feb 28	Lexington, KY	Mar 30	Pittsburgh, PA	Feb 28
Augusta, GA	Mar 14	Little Rock, AR	Mar 13	Portland, OR	Mar 16
Boston, MA	Mar 6	Los Angeles, CA	Mar 27	Providence, RI	Mar 23
Bridgeport/	Mar 6	Madison, WI	Mar 15	Quincy, IL	Feb 29
New Haven, CT		Meadowlands, NJ	Mar 7	Raleigh, NC	Mar 20
Charleston, WV	Feb 28	Memphis, TN	Feb 22	Rochester, NY	Mar 28
Charlotte, NC	Feb 23	Merrimack, NH	Mar 29	San Antonio, TX	Mar 15
Chicago/	Mar 30	Milwaukee, WI	Mar 7	San Diego, CA	Feb 23
Rosemont, IL		Minneapolis, MN	Mar 29	Springfield, IL	Mar 5
Cincinnati, OH	Mar 21	Montreal, PQ	Mar 14	Springfield, MO	Mar 28
Cleveland, OH	Mar 22	(French)		Spokane, WA	Mar 29
Columbus, GA	Feb 28	Montreal, PQ	Mar 21	Tallahassee, FL	Mar 1
Columbus, OH	Mar 6	(English)		Toledo, OH	Feb 24
Davenport, IA	Mar 13	Nashville, TN	Feb 16	Toronto, ON	Mar 20
Detroit, MI	Mar 14	New Orleans, LA	Feb 23	Tucson, AZ	Mar 20
Ft. Lauderdale, FL	Mar 23	New York, NY	Mar 30	Vancouver, BC	Mar 14
Ft. Wayne, IN	Mar 6	New York/	Mar 27	Washington, DC	Mar 6
Ft. Worth, TX	Mar 15	Long Island, NY		Wichita, KS	Mar 6
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Greenville, SC	Mar 6	Oakland, CA	Mar 13	Winnipeg, MB	Mar 6

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SYSTEMS & PERIPHERALS

What's plaguing big CPU makers

HARD TALK

TOM HENKEL
CW Senior Editor

The big five mainframe makers all have the same problem. With mainframe architectures pushing 20 years old, they are quickly running out of clever ways to boost system performance. All five have tried to update their mainframe systems with newer technology, but all are bound by a morass of software that makes developing an efficient processor difficult. All five are also facing user demands for bigger, faster systems that take up less space, use less power and are more reliable than existing systems.

The problem is a complex one. Each time a mainframe vendor announces a system enhancement that offers 1½ or two times the performance of an older system, it takes one step closer to the technological limitations of its mainframe architectures. And with each doubling of performance, the vendors take even larger steps toward that technological brick wall.

Unlike the entrepreneurial firms developing systems based on microprocessors, mainframe vendors do not have the luxury of developing systems from scratch. Users of mainframe systems are so heavily committed to existing software environments that they are not in a position simply to "make a conversion." Large corporations, whose systems contain millions of lines of code, just cannot make a conversion. IBM learned a painful lesson back in the early 1970s when it pushed 360 users into converting from a DOS- to an OS-oriented operating system. There are still DP executives who hold a grudge against IBM for that conversion. And that was a much simpler time for DP shops. Today, such a conversion would be physically impossible for many shops.

The solution appears to be a transition

See VENDORS page 68

IBM unveils impact line printer
Can operate at 3,600 line/min

RYE BROOK, N.Y. — IBM has unveiled what it claims to be its fastest impact line printer, the 4248.

The unit can operate at 3,600, 3,000 or 2,200 line/min. At 2,200 line/min, the unit can print optical recognition characters, according to IBM.

The printer uses about 46% less power and produces about 26% less heat than the earlier IBM 3211, a 2,000 line/min impact printer. In addition, the 4248 can run all 3211 programs, the IBM spokesman said.

Through program control, an operator can change speeds, select between six or eight vertical line space/in. or adjust hammer-flight timing.

The unit is equipped with microprocessor-controlled self-diagnostics and uses a 12-char. display for diagnostic and test messages, IBM said.

The 4248 can be optionally expanded from 132 to 168 print positions. This option allows side-by-side printing of two 8½-in.-wide sheets of paper, a spokeswoman said.

A basic 4248 Model 1 printer costs $90,000 and will be available in March. Lease plans are available through the IBM Credit Corp. starting at $1,926/mo. The minimum monthly maintenance charge on the 4248 is $975. The option to expand the maximum number of print positions from 132 to 168 costs $10,000 when installed at the factory and $15,000 if installed in the field. Volume discounts of up to 20% are available to users who purchase mixed orders of the 4248 and the 2,000 line/min 4245 printer, according to an IBM spokeswoman.

The printer was announced by IBM's Information Systems Group at 900 King St., Rye Brook, N.Y. 10573.

Apollo DN320 workstation bows

CHELMSFORD, Mass. — Apollo Computer, Inc. has introduced a 32-bit, floating-point workstation said to offer three times the floating-point performance of the firm's DN300.

The floating-point computational performance of the DN320 is equivalent to larger systems, such as Digital Equipment Corp.'s VAX-11/730- or VAX-11/750-class machines, for one-third to one-half the price, the vendor claimed.

In addition, the firm reportedly has more than doubled the storage capacity available for the DN300 and 320 workstations with a 70M-byte Winchester disk drive and two 8-in. Winchester-type disk drives offering 80M and 167M bytes of storage. The drives can be used on the DN460 and DN660 processor nodes and DSP160 server processor.

The DN320 features 1.5M bytes of main memory; the firm's windowing software, which can handle up to 25 concurrent processes; 16M bytes of virtual address space per processor; high-resolution bit-mapped graphics; and connectability to Apollo's Domain local-area network. The unit's 17-in., monochromatic display offers a 1,024-by 800-pixel resolution, detachable keyboard and optional touch pad or mouse.

The DN320 node and disk are said to allow users to mix systems of varying power.

The DN320 is priced at $23,400.

The 70M-byte disk features random-access seek time of 45 msec. A 1.2M-byte floppy disk is optional for backup, software distribution or personal storage. The 70M-byte disk costs $12,800, or $14,300 if integrated with the floppy disk. The 80M-byte disk is priced at $12,900; the 167M-byte disk is $16,800.

Apollo is located at 15 Elizabeth Drive, Chelmsford, Mass. 01824.

PERKIN-ELMER

Perkin Elmer Corp. has unveiled a high-speed band printer for its line of superminicomputers/**68**

Array processor out for DEC VAX line/**68**

INSIDE

Turnkey Systems/**68**
Data Storage/**68**
Terminals/**82**
Printers/Plotters/**82**
Graphics Systems/**83**
Power Supplies/**84**
Board-Level Devices/**85**
Auxiliary Equipment/**88**

Tandem 653X line gets 3270 emulation, voice recognition

By Jeffry Beeler
CW West Coast Bureau

CUPERTINO, Calif. — Tandem Computers, Inc. has enhanced its 653X terminal line with IBM 3270 emulation capability, two additional terminal models and a voice-recognition feature that reportedly provides an alternative means for entering data into Tandem processors.

Tandem also introduced a 55 char./sec. letter-quality printer for the 653X series and trimmed the price of its Model 6530 terminal by $275, a reduction of approximately 11%.

The 653X family had been slated to receive yet another product improvement — word processing capability — but the proposed upgrade reportedly suffers from serious shortcomings and is being withheld from the marketplace indefinitely, according to a Tandem spokesman.

Announcements of the latest enhancements to the 653X terminal line came on Feb. 10 during an annual shareholders' meeting at Tandem's world headquarters here. With the release of Tandem's EM3270 communications access method, all three members of the 653X series, including the two newcomers, can now interact selectively over bisynchronous lines with either IBM or Tandem host mainframes. Users can switch between IBM and Tandem processors by touching just one keyboard button, the spokesman said.

Implemented mainly in software, EM3270 enables the 653X terminals to emulate a wide assortment of 3270 series devices, including:

- The 3277 Model 2.
- 3278 Models 2, 3, 4 and 5.
- 3279 Models 2 and 3.
- Models 3284, 3286, 3287, 3288 and 3289 printers.

Because the 3270's emulation software resides in Tandem's Nonstop and TXP mainframes, none of the firm's terminals can communicate directly with IBM processors. Instead, the display units gain indirect access to IBM applications through Tandem's CPUs, the spokesman said.

EM3270 complements its developer's two existing access methods — TR3271, which allows 3270 series peripherals to treat Tandem hosts as 3271-type cluster controllers, and AM3270, which permits IBM-built 3270s to communicate bisynchronously with Tandem systems.

New terminals

In addition to operating with the existing 6530, the 3270 emulation capability is available with the 6531 and 6532, the two latest extensions to Tandem's terminal family. Unlike its older sister system, with its 15-in. monitor, the 6531 has a 12-in. display screen and is suited primarily for decision-making applications and "what-if" queries, the Tandem spokesman said.

The 6532, by contrast, comes with a 9-in. display and is aimed mainly at jobs in which desk space is at a premium.

Both 653X series additions are packaged with their electronics and monitors in separate boxes, which can be moved up to 6 ft apart from each other, the spokesman noted.

Like the existing 6530, the 6531 and 6532 support Tandem's just-announced Voice Input Option, which uses a microphone and headset to allow users to enter data simply by talking rather than by keying. Intended mainly for production-floor

See TANDEM page 68

See COBOL.

Dick is a COBOL programmer. Dick is bored. Harried. Overworked. Dick struggles with tedious trace and debugging routines. Non-existent documentation. Mainframe logjams. Dick is four months behind schedule as a result. And users are angry about long turnaround times. They yell and make Dick upset. They make Dick's boss upset. Nobody is very happy.

Dick sees COBOL as a drag. He dreams of a different sort of life. Where he's a programmer hero. Entertained by his work. Admired for his skill. Rewarded for his performance. Now his dreams can come true.

See COBOL Run.

Jane is a happy COBOL programmer. She uses ANIMATOR.™ It's a unique VISUAL PROGRAMMING™ aid for MICRO FOCUS™ LEVEL II COBOL.™ It runs on Jane's friendly microcomputer. It makes child's play of mainframe test and maintenance chores.

With ANIMATOR, Jane sees a picture of the program explaining itself. In live action. In COBOL source code. Right at her desk. As ANIMATOR displays the program listing, the cursor tracks the exact execution path. Including subroutine

branches. The view is precise. Compact. Unambiguous. And there's no waiting for computer time.

Jane can have the program run fast. Or slow. Or stop it. All at the touch of a key. This makes it easy to spot problems. Insert fixes. Set breakpoints. Instantly. Because of ANIMATOR's sophisticated debugging commands.

ANIMATOR gives Jane more freedom to innovate too. Her programs sometimes win awards. Yet she always meets schedules. Jane's boss likes this about Jane. Because he doesn't like users to yell at him.

Run, COBOL, Run!

This DP manager just got a big bonus. Because he doubled productivity. He cleared the backlog. Cut costs. Compressed development cycles. Increased programmer efficiency and satisfaction. Produced terrific applications with faster turnaround times. Put control and prestige back into the central DP function. And nobody yells at him anymore. All thanks to ANIMATOR.

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Let Micro Focus put your DP shop on the fast track. ANIMATOR makes COBOL programs easy to comprehend. Fun to develop. A snap to maintain. Without the drudgery, your programmers will be happier. They'll do better work. In record time. And your users will probably stand up and cheer.

ANIMATOR runs with MICRO FOCUS Level II COBOL for compatibility with

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Array processor fits VAX

BILLERICA, Mass. — CSP, Inc. has announced the availability of a multiuser, multitasking array processor system for use with Digital Equipment Corp.'s VAX-11/780, 750 and 730 computers.

The Mini-MAP Plus 4 system consists of up to four Mini-MAP 32-bit, floating-point array processors interfaced to one VAX-11. Each array processor can be accessed by a separate user with a different task requirement. Hence, the VAX-11 processor reportedly can accommodate up to four separate computationally intensive tasks simultaneously, each with 7 million floating-point operations per second.

The basic configuration includes the four Mini-MAP array processors, each with 64K bytes of memory and DEC Unibus interface cabling. The unit is packaged in a single 10½-in. chassis suitable for mounting in a DEC cabinet.

Larger configurations, including up to 16M bytes per Mini-MAP, are also available.

Also, the Mini-MAP Plus 4 system provides software development tools comprising the Scientific Subroutine Library of more than 235 algorithms.

The basic configuration is priced at $78,700.

CSP is located at 40 Linnell Circle, Billerica, Mass. 01821.

PE offers LP1200 printer

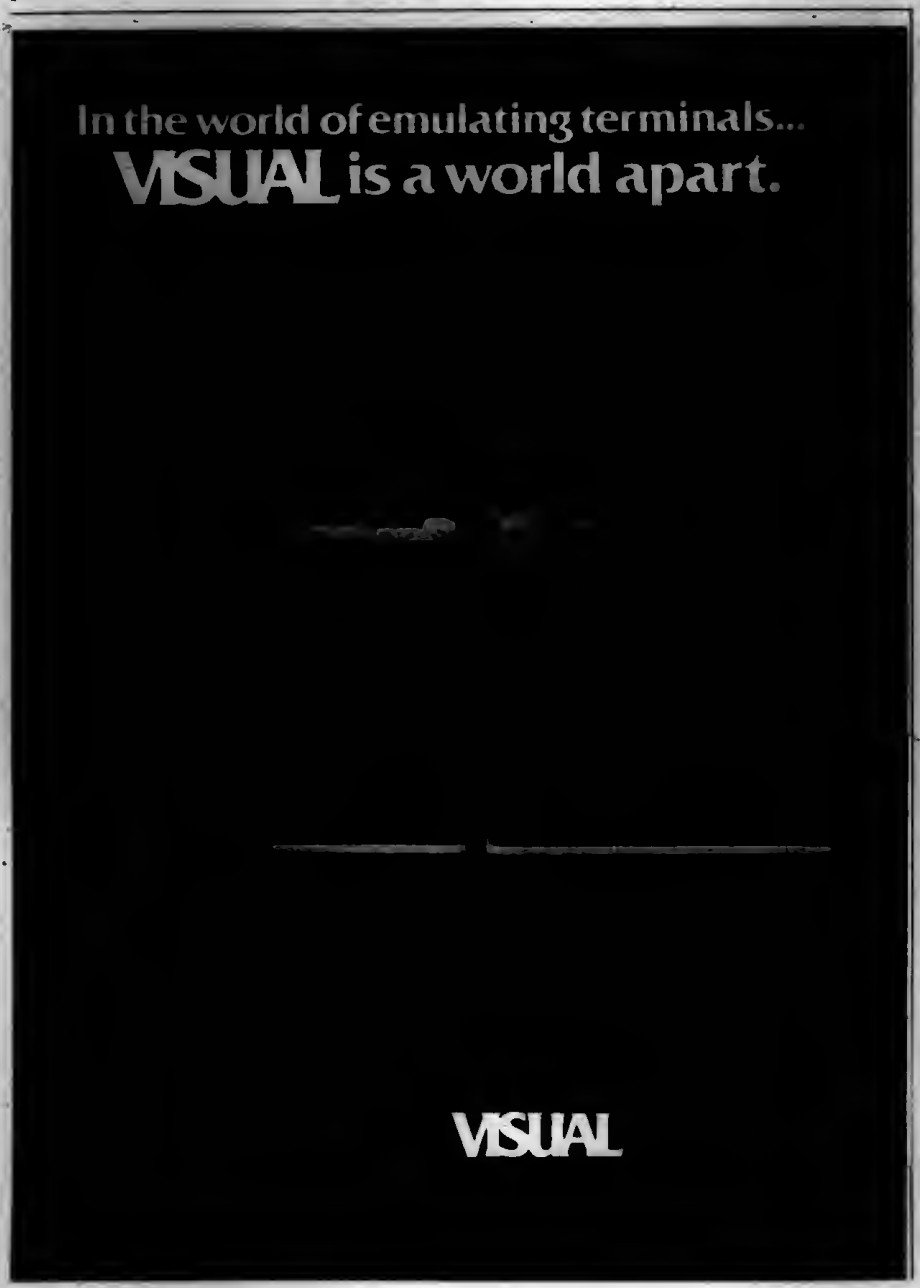
OCEANPORT, N.J. — Perkin-Elmer Corp. has introduced a high-speed band printer for use with its line of 32-bit superminicomputers.

The LP1200 is said to offer 80 or 132 columns of solid character font printing that produces hard-copy output on standard single-page or fan-fold paper.

The unit plugs directly into any PE Series 3200 superminicomputer and reportedly offers features that reduce setup time and maximize printer operation. Other features include a horizontal forms adjustment system, switch-selectable standard vertical spacing for 6 or 8 line/in., an automatic power stacker, touch-sensitive control panel and a typical throughput of 1,200 line/min when using a 64-char. set.

The LP1200 is priced at $20,900 and can be ordered with either a 64- or 90-char. set or both.

PE is located at 2 Crescent Place, Oceanport, N.J. 07757.



TURNKEY SYSTEMS

SKAMP COMPUTER SERVICES, INC.
Skamptrak

Skamp Computer Services, Inc. has introduced an entry-level turnkey system for distributors.

The system is based on a Texas Instruments, Inc. microprocessor and includes two TI Business Systems video display terminals featuring 256K bytes of memory, 17M bytes of disk storage, a 1.2M-byte diskette drive and a desktop printer that prints at a rate of 150 char./sec. It is expandable up to seven terminals.

The software, called Skamptrak, reportedly combines order entry, inventory control, purchase order, sales analysis and sales commissioning with general ledger, accounts payable and accounts receivable.

Skamptrak costs about $20,000, including installation.

Skamp Computer Services, 10261 Yellow Circle Drive, Minneapolis, Minn. 55343.

DATA STORAGE

INNOVATIVE DATA TECHNOLOGY, INC.
Magnetic tape subsystems

Innovative Data Technology, Inc. (IDT) has introduced two ½-in., 9-track, 800 or 1,600 bit/in. magnetic tape systems for the Mostek, Inc. Prolog STD bus line of single-card computer systems. The subsystems meet the requirements of IBM, the American National Standards Institute, the European Computer Manufacturers Association and the International Standards Organization.

The tape subsystems reportedly utilize an intelligent microprocessor-based controller (requiring a single STD bus slot) providing an 8-bit bidirectional parallel interface. Features include asynchronous handshaking, ping-pong buffering, front-end random-access memory buffers to 32K bytes and over 40M bytes of unformatted data storage for archival and/or disk backup.

A software sample application driver is supplied with the IDT magnetic tape subsystems.

The Series TD 1050/STD, a 45 in./sec system, is priced at $9,575; the Series TD 1750/STD, which operates at 75 in./sec, costs $11,960.

IDT, 4060 Morena Blvd., P.O. Box 178160, San Diego, Calif. 92117.

EMULEX CORP.
SC72

Emulex Corp. has announced a controller designed to allow intermixing of disk drive types on Digital

Continued on page 62

IF YOU WANT THE BEST APPLICATIONS DEVELOPMENT TOOL, TALK TO THE PEOPLE WHO DEVELOP THE BEST APPLICATIONS.

Of all the applications development tools ever designed, only one has the proven success of our new Millennium SDT.

Because Millennium SDT was designed by McCormack & Dodge, a company with over a decade of proven success developing applications. Business applications used in over thirty countries. By the world's biggest and most demanding corporate clients.

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What made the Millennium series possible was our discovery of Millennium SDT, a remarkable tool based on a remarkable truth: eighty percent of the functions in all applications are, in fact, generic. Which means that 80% are reusable.

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And just to give you an idea of how fast our applications development tool works, we've included your first application in this ad. All you do is find the dotted lines, fill in the requested information, mail the completed form, and wait for the postman to bring a packet of important information. And, if you're in a real hurry, call 1-800-343-0325.

Soon your backlog will begin to disappear. You'll be a Millennium ahead.

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SYSTEMS & PERIPHERALS

Continued from page 60

Equipment Corp. PDP-11/70 minicomputers.

The SC72 is said to operate on the PDP-11/70 cache bus using standard system software, diagnostics and embedding in place of DEC's RH70 controller.

The SC72 reportedly integrates into a single system any four industry-compatible disk drives operating at data transfer rates up to 2M byte/sec. According to the company, data packs are compatible and interchangeable between DEC RM03 (67M-byte), RM05 (256M-byte) and RP06 (174M-byte) drives and their compatible disk drive subsystems.

The RH70 emulation reportedly allows software-transparent operation under DEC's RSTS-E, RSX11M, RSX11M-Plus and other DEC operating systems.

The SC72 is available now and is priced at $7,960.

Emulex, 3545 Harbor Blvd., P.O. Box 6725, Costa Mesa, Calif. 92626.

TERMINALS

INFORITE CORP.
Inforite intelligent terminal

Inforite Corp. has announced a hand-written character-recognition terminal said to incorporate the functions of dynamic character recognition, mark/sense recognition and graphics capabilities.

The Inforite intelligent data entry terminal is said to input information directly from handwritten business forms while maintaining a hard copy of the original. It features a two-line by 32-char. LCD display, error messages and a programmable calculator function and accommodates three-part forms.

Operating independently of a host computer, it is based on the Zilog, Inc. Z80A microprocessor and contains 64K bytes of random-access memory (RAM), 56K bytes of read-only memory and 48K bytes of battery-backed Cmos RAM. Inforite costs $2,000 in single-unit quantities.

Inforite, Suite 201, 1670 S. Amphlett Blvd., San Mateo, Calif. 94402.

DATA GENERAL CORP.
Dasher D220

Data General Corp. has introduced an addition to its Dasher workstation line, said to be a color, alphanumeric video workstation for data and word processing operations.

The Dasher D220 is compatible with earlier Dasher models and offers programmable color features. It has a palette of eight colors and allows the user to select up to 64 foreground and background color combinations on a character-by-character basis, the vendor said.

The video workstation is supported by a number of operating systems and two operation modes: DG proprietary (7- and 8-bit modes) and Ansi compliant (X3.4, X3.41 and X3.64 modes). All modes are switch- and software-selectable.

The Dasher D220 is available in two packages: a monitor, keyboard and cables configuration for $2,210; or a monitor only for $1,895.

Data General, 4400 Computer Drive, Westboro, Mass. 01581.

MSD SYSTEMS, INC.
PSC-1

MSD Systems, Inc. has announced PSC-1, a retail point-of-sale terminal that uses a Zilog, Inc. Z80 microprocessor.

PSC-1 can function as a stand-alone unit or can be tied into a network, according to the vendor. The PSC-1 features a security program, density studies by the hour and department, inventory polling, product analysis and calculations of profit per square foot, the vendor said.

The unit sells for $3,995. Suggested options include a dual disk drive for $2,500 and a report generator which costs $995.

MSD Systems, Suite 306, 10051 Monroe Drive, Dallas, Texas 75220.

PRINTERS/ PLOTTERS

VERSATEC, INC.
Disk-based plotting systems

Versatec, Inc. unveiled optional 40M- to 140M-byte, 5¼-in. Winchester disk drives for its random-ele-

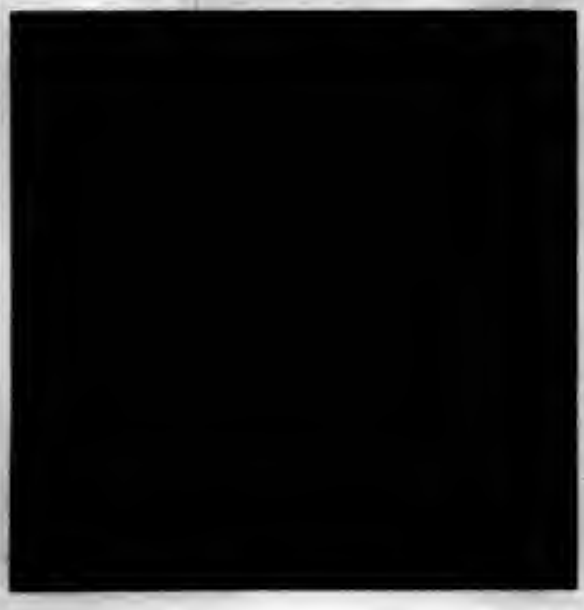
Whether you're looking for Payroll, Personnel, Pension Administration or Claims Processing software, Information Science's "Whole Person" software gives you a comprehensive system that provides superior technical features.

Systems for both Database and Non-Database

InSci's state-of-the-art payroll/personnel database system is integrated into a number of database management environments—including IMS, DL-1, and IDMS. Native mode, the system is designed to take full advantage of each specific database structure, eliminating clumsy, resource-draining interface programs.

In addition, InSci offers two non-database systems. One using a sequential file structure, the other using a VSAM access method.

INSCI INT "WHOLE PERSON" SOFTWA SYSTEM THAT MEETS AL PROFES



Introducing On-line PAS

PAS–InSci's new Pension Administration System–is available as a complement to our payroll/personnel package or as an independent, stand-alone system. PAS automates most aspects of pension administration from ERISA reporting and compliance to benefits calculation, retirement counseling, vesting schedules and benefits statements.

Software for Health Insurance Claims

Our health insurance claims processing system permits your organization to self-administer group health, dental, and disability claims–providing significant cost savings while eliminating the need to keep duplicate information for insurance purposes.

The Complete Human Resource Package

We call it "Whole Person" software because it is the most comprehensive, technically advanced set of human resource systems avail-

ment processor and IBM-compatible on-line plotting controller. The disk options are said to enable Versatec on-line electrostatic plotting systems to handle longer, more complex plots in color or black-and-white with less CPU overhead.

The disk drive is available as an option with new systems or as an upgrade in existing installations. Acting as a raster data buffer, the disk drives spool the raster image for a high-speed transfer to the plotter. On-line electrostatic color plotting requires the disk option and the firm's Versaplot color random software, which provides for eight line colors and 256 predefined area colors. Also supported is black-and-white plotting.

The disk option adds $13,500 to the price of a random-element processor or IBM plotting controller; add $1,500 for in-field upgrades to existing systems.

Versatec, 2710 Walsh Ave., Santa Clara, Calif. 95051.

GRAPHICS SYSTEMS

AUTOGRAPHIX, INC.
Autographix 200

Autographix, Inc. has announced an on-site workstation and automated business software package developed to design and produce high-quality presentation graphics for business.

Autographix 200 is said to produce high-resolution 35mm slides, color overhead transparencies, 8- by 10-in. color prints, black-and-white or color hard copy and video, electronic boardroom visuals.

The system is based on IBM's Personal Computer XT microcomputer and can function as an independent graphics system or as the nucleus of a graphics network for IBM Personal Computers and Apple Computer, Inc. microcomputers, according to Autographix.

Standard features reportedly include Autographix Guideline and Polycurve software, a graphics display processor, a graphics tablet and interface for creative work, Epson America, Inc. printers and a Hayes Microcomputer Products, Inc. Smartmodem.

An option is the Matrix Instruments, Inc. QCR film recorder, which produces 2,000 to 4,000 pixel/line slides on-site.

Normal slide needs and slide overlands can be transmitted over telephone lines to Autographix production centers for delivery of finished slides in five to 24 hours, according to the company.

The system is available now. The basic system is priced at $36,500. The optional camera is priced at $32,000.

Autographix, Citicorp Plaza, W. Bryn Mawr Ave., Chicago, Ill. 60631.

CATRONIX CORP.
Petcat

Catronix Corp. has introduced a stand-alone, turnkey engineering workstation for mechanical design.

According to the vendor, the Petcat desktop system is the first mechanical design workstation for computer-aided engineering that is not a superminicomputer or a remote terminal to a mainframe computer.

The workstation is built around the IBM System 9000, a laboratory-oriented microcomputer based on the Motorola, Inc. 68000 microprocessor, and three of the vendor's software programs: Catsolid, a three-dimensional solids-modeling system; Catfem, a finite-element modeler; and Catface, an interface to finite-element analysis programs, the vendor said.

The price is $28,500 for a system comprised of a System 9000 with 1M byte of memory, 20M-byte Winchester disk, 8-in. floppy disk, IBM graphics screen, 16-color raster display and Catsolid and Catfem software, a vendor spokesman said.

Catronix, 120 Ralph McGill Blvd. N.E., Atlanta, Ga. 30308.

RASTER TECHNOLOGIES, INC.
Model One/80; Model One/10

Two enhancements to the Model One line of graphics systems were announced by Raster Technologies, Inc.

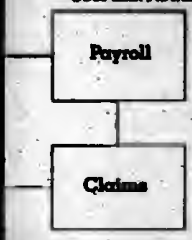
The Model One/80 graphics system features a 1,280- by 1,024-pixel resolution, a 60Hz refresh rate and a pixel

Continued on page 64

able. InSci started the HRS industry back in 1965, and we've led the field ever since. Our technical experts have provided you features unmatched by any other company.

Modularized Design For Easy Maintenance. InSci "Whole Person" software was designed from the top down and is highly modularized, providing maximum flexibility. A single module or subroutine supports each specific function in the system.

User Exit Routines. Strategic areas built into the InSci system allow exits to override the standard system routines. This means you can add your own programs without changing database system codes. InSci also gives you source codes so you can go into the system directly if you desire and still receive maintenance.



Preliminary or final processing mode. InSci systems let you select the most efficient operating mode for each processing task. All changes can be processed in real-time, so they become effective immediately. Preliminary processing allows for simulating situations such as a payroll run without affecting the database. And, of course, InSci systems provide state-of-the-art security precautions, complete maintenance support and training.

Write us. Or Call.

InSci "Whole Person" software–for more information, write us or call: Information Science Incorporated, 95 Chestnut Ridge Road, Montvale, New Jersey 07645. Attention: Chris Hanavan. 201-391-1600.

InSci
WHOLE PERSON SOFTWARE.

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L THE NEEDS OF THE DP
SIONAL.

SYSTEMS & PERIPHERALS

Continued from page 63

update rate of up to 8.7 nsec per pixel.

The Model One/10 offers a 640- by 480-pixel resolution and a 60Hz refresh rate. Both products use the firm's proprietary very large-scale integration (VLSI) microprocessors, a spokesman said.

The Model One/80 combines a 16-bit microprocessor, a bit-slice processor and proprietary VLSI accelerators. It draws more than 70,000 one centimeter random vectors per second, and a double-buffering feature provides vector drawing rates up to 115M pixel/sec.

The unit was designed to operate with 32-bit workstations and processors. The unit costs $18,960 for a 1,280- by 1,024-pixel resolution system with eight planes of image memory, cabinet, monitor, keyboard and local firmware, the vendor said.

The Model One/10 uses a 16-bit microprocessor and proprietary VLSI processors to achieve a vector writing performance of 1M pixel/sec. VLSI hardware performs image memory refresh and timing, video refesh and hardware vector clipping and picking. The Model One/10 offers local display and Digital Equipment Corp. VT100 terminal capabilities. The unit costs $7,995 for 10 planes of memory, monitor, keyboard, all firmware, local display list and program development software, the vendor said.

The Model One/80 is available immediately, the Model One/10 will be available in April, according to the vendor.

Raster Technologies, Executive Park Drive, North Billerica, Mass. 01862.

ENGINEERING AUTOMATION SYSTEMS
EAS/700 Series enhancements

Engineering Automation Systems has announced enhancements designed to increase the on-line storage capabilities of its EAS/700 Series graphics system.

Enhancements include a 46.3M-byte Winchester disk drive and an increase in central processing memory to 1.5M bytes.

The EAS/700 is an engineering workstation featuring Microsoft, Inc.'s Xenix operating system and Engineering Automation's PCX printed circuit-board design software and OAX documentation software. The enhanced version is available now.

The color system is priced at $48,450, and the monochromatic system costs $40,750. A system with an eight-color plotter, matrix printer and 1,600 bit/in. magnetic tape drive costs about $84,000.

Engineering Automation Systems, 836 Silas Deane Highway, Wethersfield, Conn. 06109.

CASCADE GRAPHICS DEVELOPMENT, INC.
Cascade X

Cascade Graphics Development, Inc. has introduced a high-resolution computer-aided design and drafting (Cadd) system, the Cascade X.

In addition to the standard 12-in. monochrome CRT terminal, the Cascade X features a 19-in. nonglare monitor that reportedly provides 1,024- by 796-pixel resolution, dual monitors and Motorola, Inc.'s 68000 microprocessor. The system includes 756K bytes of random-access memory, which the vendor claims offers nearly instantaneous processing of graphics input. Up to eight workstations can be used in a network with the Cascade X, the vendor said.

The vendor said the Cascade X is compatible with older Cascade products, as the products are totally compatible.

The Cascade X system also includes a CPU, keyboard, tablet, joystick, 5M-byte hard disk storage expandable to 80M bytes and a double-sided, 5¼-in. floppy disk drive for inputting Cascade software and updating or storing drawings. A-size through E-size plotters and a dot matrix printer are optional.

The Cascade X costs $30,000.

Cascade Graphics Development, 1000 S. Grand Ave., Santa Ana, Calif. 92705.

POWER SUPPLIES

DYNAFIVE CORP.
Dynaswitch; system enclosure

Dynafive Corp. has announced a current-controlled switch and a system enclosure for Digital Equipment Corp. and compatible products.

Dynaswitch is designed to minimize interference and current surges, sense the on/off condition of ac power to the master outlet and control the ac power to the switched outlets.

The system enclosure is said to feature a 40A switch-power supply; an eight-slot quad backplane; six communications ports, mounting for a 5¼-in. Winchester disk drive; and dual or single 5¼-in. half-height floppy disk drives or backup tape.

Both products are available now.

Dynaswitch is priced at $133, although quantity discounts are available.

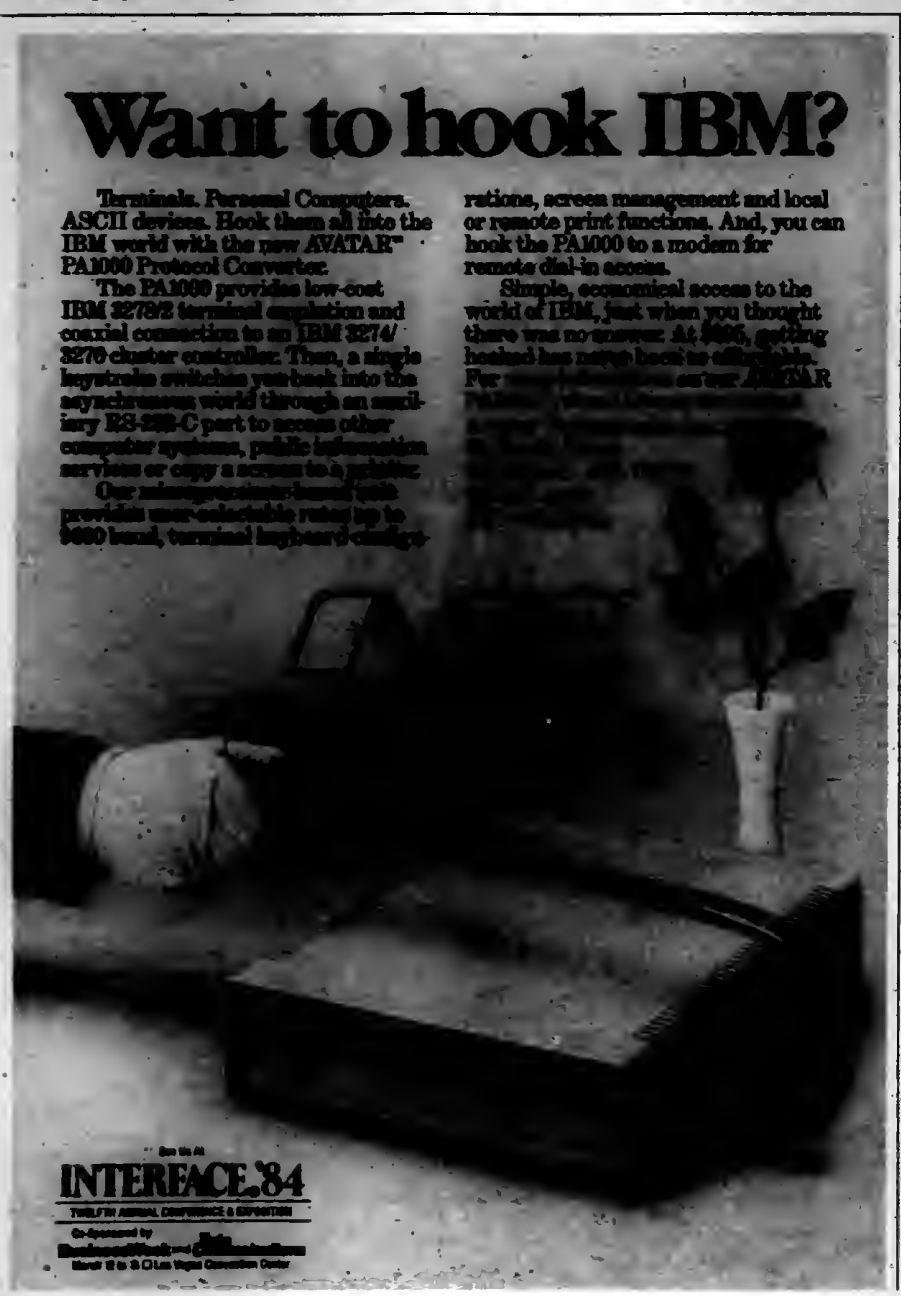
The enclosure is priced at $1,270 for a rack-mount model, $1,520 for a tabletop model and $1,770 for a pedestal model, with quantity discounts available for all three models.

Dynafive Corp., 12040 Western Ave., Garden Grove, Calif. 92641.

TOPAZ, INC.
Maximum Value Powercenter

Topaz, Inc. has announced the availability of its Maximum Value Powercenter (MVP) featuring its single-point grounding.

The MVP reportedly distributes



SYSTEMS & PERIPHERALS

power throughout a computer room while protecting computer circuitry from powerline noise. Features include flexible, watertight, shielded cables; 126 pole positions; digital system-status monitoring; secondary main-circuit breakers; a ground-fault interrupt; and a building-alarm interface package as standard equipment.

The units are reportedly 96% power-efficient and are available in power ratings of 100-, 125- and 150 kVA, the vendor said.

MVP units range in price from $12,695 to $14,770.

Topaz, 9163 Topaz Way, San Diego, Calif. 92123.

BOARD-LEVEL DEVICES

OMNIBYTE CORP.
OB68K/MMU

Omnibyte Corp. recently announced the OB68K/MMU, a large-system CPU board providing hardware memory management for multiuser systems and other applications requiring protected segments of memory.

The board features the Motorola, Inc. 68010 processor with temporary internal register storage and process retry upon receipt of a bus-error signal, delayed bus-error handling for error detection and correction and virtual memory capabilities.

The Omnibyte board provides from one to four Motorola 68451 memory management units partitioning physical address space into 32 to 128 segments.

System-support functions of the product include a real-time calendar/clock with battery backup, two RS-232 serial I/O ports, a software-definable bit/sec rate generator with 18 standard settings and one 240-bit timer.

The board is priced at $1,495 for a 32K-byte version and $1,995 for a 128K-byte version.

Omnibyte, 245 W. Roosevelt Road, West Chicago, Ill. 60185.

AUXILIARY EQUIPMENT

SCIENCE DYNAMICS CORP.
Act II

Science Dynamics Corp. has announced an access-charge measurement device designed for telephone operating companies to use in measuring, originating and terminating traffic on trunks and lines.

The Act II system reportedly features electronic metering of the number of in and out accesses and their duration for each time period, with front-panel controls for local readout and programming and security-code protection.

The company reports that two models are available. The ACT-LTBR was designed for medium to large offices, accommodating up to 256 inputs, mixed lines, trunks and expansions in groups of 16. The ACT 16 terminal is offered for small- to medium-size offices and accommodates up to 16 line or trunk inputs.

The device is said to include data collection terminals and a remote data administration system (Rdas), a central processing unit that reportedly polls multiple terminal installations in accordance with the user's billing schedule, computes usage and formats the information to user-defined specifications.

According to Science Dynamic, the Rdas includes self-test, diagnostic and reporting capabilities.

Prices start at $1,940 for ACT 16, $3,150 for ACT-LTBR and $36,215 for the Rdas. Delivery, according to the company, is 60 to 120 days after receipt of order.

Science Dynamics, 1919 Springdale Road, Cherry Hill, N.J. 08003.

SUMITOMO ELECTRIC USA, INC.
Personal Scanner Bar-Code

Sumitomo Electric USA, Inc. has introduced the Personal Scanner Bar-Code, a hand-held bar code reader.

The product reportedly reads different styles of bar code fonts, including NW-7, UPC, EAN and JAN fonts. The Personal Scanner Bar-Code interfaces with a number of products, including IBM terminals, the vendor claimed. The bar code reader is available as an integrated or stand-alone product.

The Personal Scanner Bar-Code is priced at $750.

Sumitomo Electric USA, 551 Madison Ave., New York, N.Y. 10022.

SENTEC, INC.
System II

Sentec, Inc. has announced a security system designed to protect computers from 14 environmental, power-line and security threats.

System II reportedly offers monitoring and reaction protection from overheating, transients, power interruptions, humidity, loss of phase, smoke and airborne particles, brownouts, power-line fluctuations, phases out of sequence and water.

The system was designed to cut power to the computer when dangerous conditions exceed manufacturer-specified parameters.

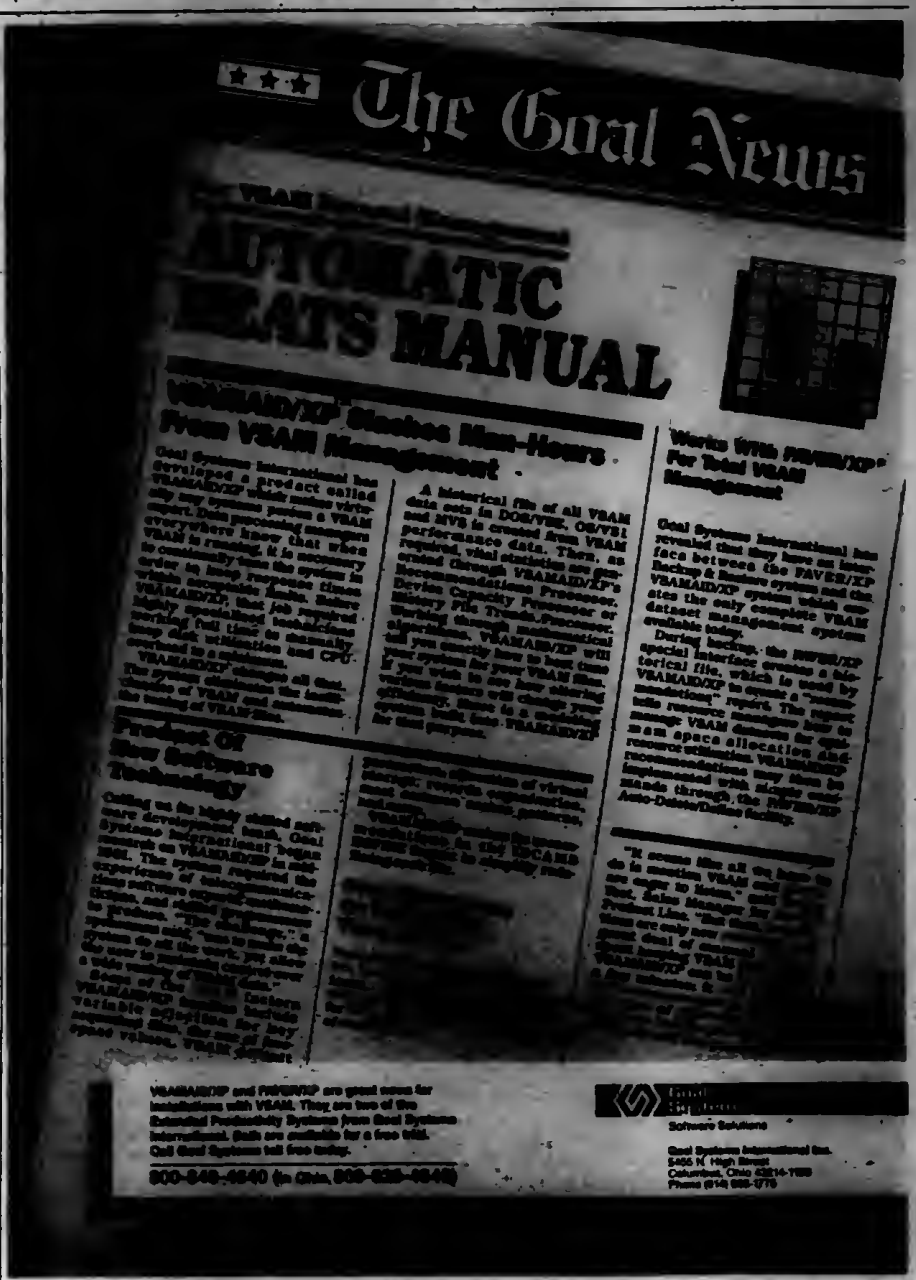
It is said to feature LED status indicators, audible alarms and a remote status-slave module. That module is designed to allow personnel at a remote station to respond to fault conditions and alert support personnel.

It is said to allow interface with an automatic telephone dialer, which can dial preprogrammed numbers with status messages.

The System II is available now at prices starting at $13,600:

Sentec, 1965 N. Dutton Ave., Santa Rosa, Calif. 95401.

See AUXILIARY page 66



AUXILIARY from page 65

DISCWASHER
Clean Runner

Discwasher has introduced an interactive disk drive cleaner designed to lead the user step-by-step through the cleaning process.

The Clean Runner is said to be a combination program/cleaner that safely cleans disk drive heads, avoiding problems associated with contamination.

It utilizes a lint-free cleaning surface bonded to a polyester diskette and is a dry system.

Suggested retail is $24.95.

Discwasher, P.O. Box 6021, 1407 N. Providence Road, Columbia, Mo. 65205.

RECOGNITION EQUIPMENT, INC.
Bar-code reader

Recognition Equipment, Inc. (REI) has introduced a bar-code reader said to read and convert both human-readable OCR fonts and bar codes into computer-compatible information.

The hand-held input device is used to scan OCR and bar-code information interchangeably without operator intervention, according to the vendor. It reads fonts, such as OCR-A Alphanumeric, Multifont Numeric and bar codes such as UPC/EAN, Code 39 and 2 of 5 Interleave.

Suggested end-user price is $1,800 each, a spokeswoman said.

REI, P.O. Box 660204, Dallas, Texas 75266.

VENDORS from page 57

period. That is what IBM appears to be doing with its MVS/XA operating system. IBM created an environment which, it hopes, will allow users to run existing programs while converting frequently used applications to take advantage of the extended addressing offered by MVS/XA.

Burroughs Corp. also appears to be taking the same approach with its proposed A series of mainframe processors. The first model of the A series, the A 9, allows users to run existing programs developed for the B4900, B5900 or B6900 systems.

But this turtle-like transition period is occurring during a time when technology is whizzing past the older mainframe processors. Microcomputers, for example, started out as 8-bit systems that offered some rudimentary computing capabilities. Within two years, micros have developed into 32-bit systems that are already challenging the performance of low-end mainframes.

Mainframes are not going to die out, but the dramatic advances in microcomputers may erode their importance in corporations. More segments of companies appear to be bypassing the corporate mainframes in favor of smaller systems that better fulfill their specific processing needs. That trend may improve user productivity, but at what price? Many firms are already finding that control of corporate data is slipping away. There may come a day when the micro users come crawling back to the DP shop complaining they have lost all control over how employees are using their micros.

What happens then? Will it be possible to bring everyone back into the more controlled environment of mainframe processing? Will employees want to give up the independence found in microcomputers? Can a DP department handle all the processing needs of a big corporation?

As the world becomes more dependent on computers, the issues involved with managing information appear to be outpacing the technological developments that created them. The solution may be found back at square one, the mainframe processor. But this time, a mainframe is needed that does far more than just process information; it must manage an entire firm and cater to the needs of each individual within that firm. The task sounds impossible for a single machine.

TANDEM from page 57

and similar applications in which constant manual activity hinders conventional data entry, the voice-recognition feature is implemented on a circuit board that contains enough memory to hold a vocabulary of 200 words.

Scheduled for first-customer shipment in April, the voice-recognition feature costs $1,800. The 6531 is priced at $2,100, the 6532 at $1,950 and Tandem's letter-quality printer costs $2,995. Both additions to the 653X terminal family will be available for delivery this month.

EM3270 can be obtained for a one-time, per-processor license fee of $500, plus a $20/mo maintenance charge per system. The capability is available from Tandem at 19333 Vallco Pkwy., Cupertino, Calif. 95014.

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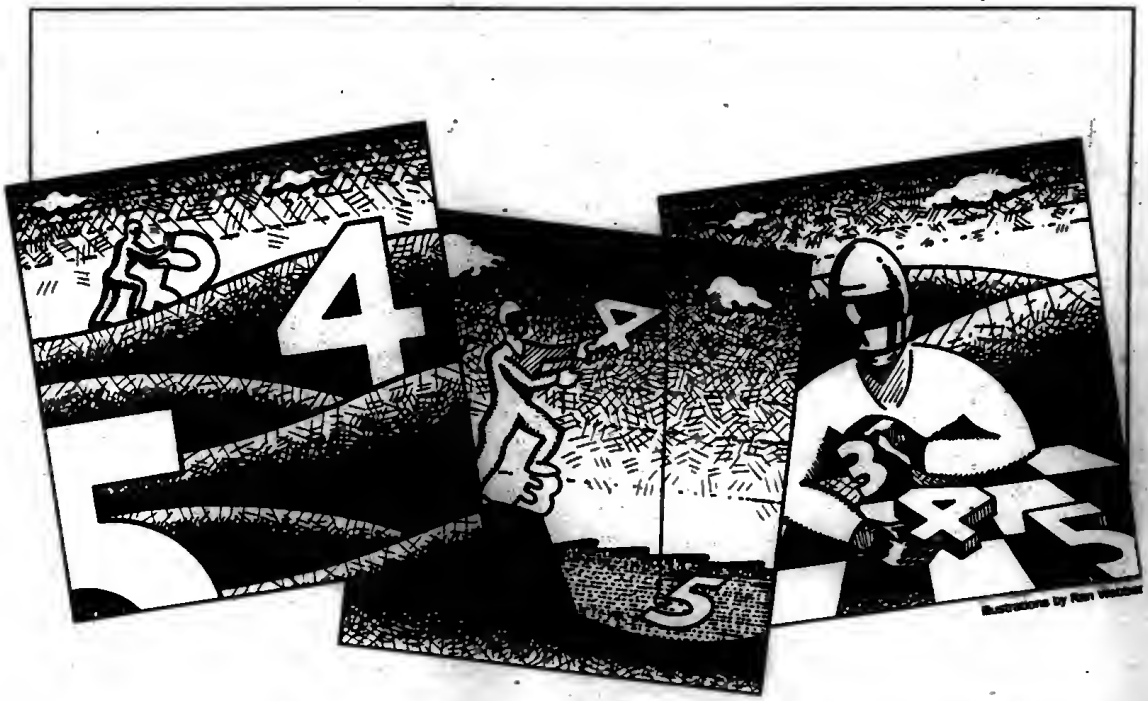

Illustrations by Ron Wahlman

Strategies for implementing fourth-generation software

By Paul R. Hessinger

The speed and drama of technological innovation often creates confusion for a firm without a business-driven technology strategy. Part of the challenge is to separate marketing hype from technical reality. A specific new facility may be a major innovation. But does it warrant major modifications to a firm's inventory of computing resources, such as a change in an operating system?

Fourth-generation software is one of the most elusive new technologies. The term creates a gray area between major categories, such as systems and applications software. For example: Is Unix an operating system or a fourth-generation language? Die-hard technicians will suggest that even Cobol and RPG-II have a place in fourth-generation discussions. This "technocratic status quo" tendency is evidence of the necessity for a human factor orientation in an information systems technology plan.

People choose tools they are most comfortable with. They do *not* always choose the best tool for a specific task. Even the most competent "handyman" will continue to use a trusted tool rather than experiment. At the other end of the spectrum is the person who is always in search of an easier way, often confused with a new way. These psychological factors should be considered as fourth-generation languages are offered to "third-generation" programmers.

Powerful facilities for automated application development do exist. But even in the third generation, powerful facilities fell by the wayside — the result of indifference by technicians who were not encouraged to understand the new tools; and the result of outright rejection by users (DP and business) unwilling to play a different role in the information systems development process (for example, end users defining their requirements to an on-line dictionary facility).

Those responsible for a technology strategy must, at least for their own corporation, define: a) what a specific tool will involve in terms of processing facilities; b) what user group(s) will utilize the tool(s); and c) necessary and optional interfaces to other components of the overall technology.

It is acceptable that within a broad

In reality, business objectives, human factors and technological integration are one in the same issue — a management strategy for fourth-generation tools. More accurately, it is a strategy for more productive information processing.

category, such as fourth-generation software, specific products will have overlapping facilities. This overlap must be identified before a firm ends up with several tools that breed confusion and unproductive competition among data processing personnel and users. The rationale that the initial purchase price for a fourth-generation product is relatively low often becomes a convenient escape from the responsibility of carefully selecting and implementing it.

It is unlikely that an industry standard will be adopted in the near future for facilities that qualify a product as a fourth-generation language. Marketing enthusiasts for specific products are already "plotting" the emergence of fifth-generation capabilities. In some cases, these claims are a legitimate extension of product development efforts. Others are attempts to promote tools that may be a little ahead of their time; our third-generation ignorance must be overcome relative to fourth-generation languages before we are ready for fifth-generation artificial intelligence systems.

A management strategy must control the temptation to take a quantum leap forward in applications development technologies. The strategy must involve a *pragmatic* migration to new tools, no matter how powerful they may be. "Revolution" and "cultural change" are alternatives *only* for those corporations hopelessly mired in second-generation "swamps" (for example, running OS/MFT on an IBM 370/158 with 1401 autocoder emulation and mainly RPG and BAL applications). The technologist must develop a management strategy that considers technical issues and human factors related to the technology.

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General facilities

The following can be stated as general prerequisite facilities in a fourth-generation applications software product for a large system environment:

a) The primary command language is nonprocedural.

b) An information/data directory/dictionary controls overall use of the tool.

c) The system software environment (for example, the operating system and data base management system) is transparent.

d) The system was designed for interactive use with significant menu-driven, prompted processing.

e) The system can be used by nonprofessional DP personnel (the type of application to be built determines the necessity of this feature; for example, operational transaction — no, ad hoc query — yes).

Clearly, a broad range of products satisfies these requirements: National CSS, Inc.'s Nomad2; Oxford Software Corp.'s UFO; Mathematica Products Group's Ramis II; Applied Data Research, Inc.'s Ideal; Information Builders, Inc.'s Focus; Cullinet Software, Inc.'s ADS/O; Oracle Corp.'s Oracle; IBM's DB2; Software AG's Natural; and Informatics General Corp.'s Mark V. Each qualifies as a fourth-generation language.

Useful subdivision

A further challenge faced by those developing and implementing a fourth-generation strategy is to subdivide the languages into two categories:

1) Application (transaction processing) generators.

2) Information generators.

An application generator is intended primarily for developing structured, data base-oriented, inquiry/update transaction processing application programs.

An information generator is intended primarily for applications that are not fully structured. In addition, the target applications normally involve user-defined information requirements which, in turn, involve dynamic data access paths and reporting formats.

The subdivisions will possess common facilities. The type of applications to be built and the intended user are key factors in selecting a tool from one category or the other. Without this subdivision, the "technologist" will be frustrated by three general types of rejections.

The first is the inability to aim a tool at a specific business target. For instance, the use of an application generator (the tool) is intended to reduce backlog and control programmer head count

(target) through increased productivity.

Trying to build on-line transaction processing IMS capabilities with Focus leads to increased head count for Focus specialists and decreased productivity of other DP personnel (in IMS data base administration, for instance) who attempt to integrate the new tool.

Moral: Powerful tool, wrong utilization with little or no business benefit. Focus is an information generator, not an application generator.

The second major obstacle that occurs if fourth-generation languages are approached as a general class of software is a lack of ergonomic sensitivity.

From a technological perspective, the specific facilities of a given product must take into account the intended user. For example, an information generator (such as Ramis II, with its associated facility Relate) will be more user-friendly if it employs a relational view of the data to be processed in a specific application. An end user requires simple data structures.

If relational capabilities and other facilities are arbitrarily employed as evaluation criteria, it is entirely possible that pertinent human factors will be overlooked and users will resist a tool.

On the other hand, a transaction processing generator may be inhibited by relational-only views unless the generator is integrated with a full-function DBMS that provides for relational and other data structures (for instance, the automatic system facility with IDMS/R from Cullinet). Operational transaction processing applications often require complex data structures that are difficult to implement efficiently with relational structures. This difficulty can seriously impede the progress of data base administration and development personnel as they wrestle with the simplicity of relational structures for complex data base designs to support transaction processing.

If relational capabilities and other facilities are arbitrarily employed as evaluation criteria without the recommended subdivision, it is entirely possible that pertinent human factors will be overlooked and user resistance to a tool will result. Certain classes of end users, with the proper training and support, can be productive with semiprocedural languages, particularly those that are dictionary-driven and prompt-oriented. In other cases, users, for aptitude or business responsibility reasons, may be unable to use any language that requires more than pushing a button (full nonprocedural).

Case study

Suppose a firm's MIS manager dictates that only nonprocedural tools will be considered in an upgrade of application development facilities. Most "new" applications will be enhancements to existing operational systems. An nonprocedural "application generator" is selected, but it does not have a convenient interface to procedural languages, which are better suited to the structured portions of applications being implemented. Programmers become frustrated because they constantly must bypass the "applications generator" as existing Cobol applications require procedural changes. Eventually, programmers completely avoid the tool.

The tool is perfect for end-user information retrieval, but was not included in a search for information center tools because "It didn't have relational or graphics facilities." Although not installed at this site, options for both existed. The tool could be better classified as an "information generator."

The application requirements dictated a fourth-generation language with good procedural facilities. Because one was not chosen, the facility's programmers now reject fourth-generation languages in general.

A second case study

The third obstacle faced by the technologist will be technological disintegration. Consider a second example: An MIS manager focuses on a comprehensive fourth-generation tool with proven end-user capabilities. It has been employed to reduce significantly applications backlogs in other installations. The tool is promoted as a fourth-generation development workstation. However, the "application generator" operates only with that vendor's DBMS. Is it worth the cost of building interfaces to the currently installed DBMS and of retraining the development staff to support the implementation of end-user-oriented applications? Will the methodologies currently in place be modified to reflect the use of a new tool for operational systems?

Situations like this one often result in an investment of more resources in managing rather than applying the technology. A "new way" of developing operational applications may be a more comprehensive change than implementing an information generator primarily for end-user processing.

Obviously, the selection of a new tool must involve careful analysis of its facilities and the potential impact on how other tools operate. In addition, the selection should be driven by the composition of a firm's development backlog. When reporting applications dominate, an information

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generator will pay off. Technicians will not have to spend time building interfaces between Cobol programs and nonprocedural facilities.

The information generator should have its own "data base management" facilities. This will minimize the impact on a production DBMS, such as IDMS or IMS. The interfaces the tool might have to full-function DBMS can be used as a channel to pass necessary data from production to end-user applications. Data availability does not become an obstacle.

Reverse the situation and consider the impact if an information generator is selected when transaction processing applications dominate the backlog. Even with careful planning and controlled implementation, technicians will fight the technology. When the tool does not fit the type of information processing task being addressed, development personnel will attempt to build their own interfaces between the fourth-generation language and conventional tools. The "promise" of those languages begins to disintegrate.

Consider the impact if an information generator is selected when transaction processing applications dominate the backlog. Even with careful planning and controlled implementation, technicians will fight the technology.

Target users

Application generators are represented by products such as ADS/0, Ideal, IBM's ADF II (between the third and fourth generation?) and Natural.

Information generators include Focus, Artificial Intelligence Corp.'s Intellect (fifth generation?), Nomad2 and Ramis II.

In the background, the architecture of products such as IDMS/R, IMS/DB2 and Datacom/DB is a key parameter for effective technological integration of fourth-generation languages.

A specific organization considering fourth-generation tools could develop an expanded list of technical prerequisites for each category of these products. Relational views of data, graphics facilities, the ability to merge data with text and so on vary in relevance based upon the category being considered. For example, application generators probably do not need graphics but should have automated documentation, which is facilitated by text processing.

One Fortune 100 MIS organization used the following list of evaluation criteria as it searched for an applications generator:

General environment:

How does the product perform in respect to resource usage?

- Response time.
- Storage overhead.

How many customers are using it? How long has the product been around? What percentage of on-line application development is done with this tool?

Is 24-hour customer/technical support available?

Can this tool "talk" to the installation dictionary? Does it have its own?

How much education is available?

Is there a relational data base available that is integrated with the tool? Can this product be used without a relational data base?

Is user security adequate?

Is system security adequate?

Programming/technical concerns:

Any batch submission necessary?

- For screens.
- For test files.
- For procedural code (precompiler).

Is the end source language Cobol or tool-related? (Is maintenance done in current technology?)

Where is source stored?

- Installation library.
- Secure areas within the tool.

How is DBMS navigation handled? (Other access methods?) Are data base control blocks defined to the tool or to each application developed on the tool?

Are color CRTs supported? 132-character terminals?

Are PL/I or Cobol exits applicable?

How long does installation take? What kind of personnel resources does it take to install and maintain?

How much on-line documentation help is there? Are the manuals on-line? Are reference cards available? How long does it take for a programmer to become productive?

How flexible is the procedural code?

Can it be used for prototyping? Is the prototyping effort transferable to the production version?

How good are the editing facilities?

- Copy previously written code?
- Field/line/program easily modified?
- Copy/rename?
- Sequencing used or available?
- Scanning facilities?
- Temporary versions?
- Full-screen editing support?

System concerns:

How extensive is recovery from hardware failures?

What is the extent of ongoing maintenance and reorganization?

How and where does it run?

How are backup and restores handled?

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IN DEPTH/FOURTH-GENERATION STRATEGIES

At the highest level from a human-factor standpoint, the subdivision provides the opportunity to select a tool well suited to the task. If end-user report generation is the task, let the end user evaluate a tool on a trial basis. Imagine an end user being asked to generate an application with ADF. That kind of situation has come up as MIS departments are caught in the fourth-generation language "gold rush."

The recommended subdivision, perhaps somewhat arbitrary, would prevent this situation. Applications generators are DP tools; information generators are end-user-oriented tools. At the very least, the recommended subdivision is a start for an organization trying to develop a fourth-generation language strategy.

While the workstation environment is also applicable to end users, it should be a prerequisite for a fourth-generation language geared to the professional systems developer.

From an ergonomic perspective, when end-user fourth-generation languages are being considered, perhaps defining "end user" in your corporation is a logical starting point.

There are two essential "human factors." First is the nature of the brain. Short-term memory is often used in information processing tasks, and long-term memory is used in analytical, information retrieval-oriented tasks. Consider the question: "Where would I look for a list of current customers?" Long-term memory is scanned as a person tries to remember where the information may be stored.

Preparation of a report is a processing-oriented task. If a fourth-generation language is to be used by an end user, the language must take into account a very limited short-term memory capacity. Psychologists studying human beings as a form of "information processor" have estimated short-term memory capacity as seven plus or minus two "chunks" of data. In a request for a report, an end user would probably need to define in his short-term memory at least the following:

- Name for the report.
- Where the data will come from.
- Basic fourth-generation language command(s) to be used to request the report.

If each item is considered as a chunk, the limits of short-term memory are not exceeded. If a user could enter "Report 'Current Customers' from Customer File," then this fourth-generation language would surely be user-friendly.

It is what happens next that determines if the product is ergonomically sound. If the fourth-generation language prompts the user for other parameters (for example, lines per page) and uses standard information (such as file layout for master files), then short-term memory capacity is efficiently used for processing tasks (defining specific fields of data required). It is not cluttered with items from long-term memory, which remains an analytical tool.

The technical facilities of the product must consider that a user will be involved in other tasks as he employs a fourth-generation language. A limited number of commands, an English-like syntax and short- and long-term memory "assists" (prompts, dictionary) are examples of favorable ergonomic capabilities in an end-user-oriented fourth-generation language.

The second major human factor, of course, is the user's interface to the fourth-generation language. Two extremes are desirable — English language and pushbutton. In the first, a user formulates a request as if he were talking to another human. (Intellect is a leading product on the market in this respect.) In the second, a user selects options from a menu by depressing a key or touching the screen. IBM's dialogue management facility is based upon this concept. An end-user-oriented fourth-generation language will benefit ergonomically from a combination of the two.

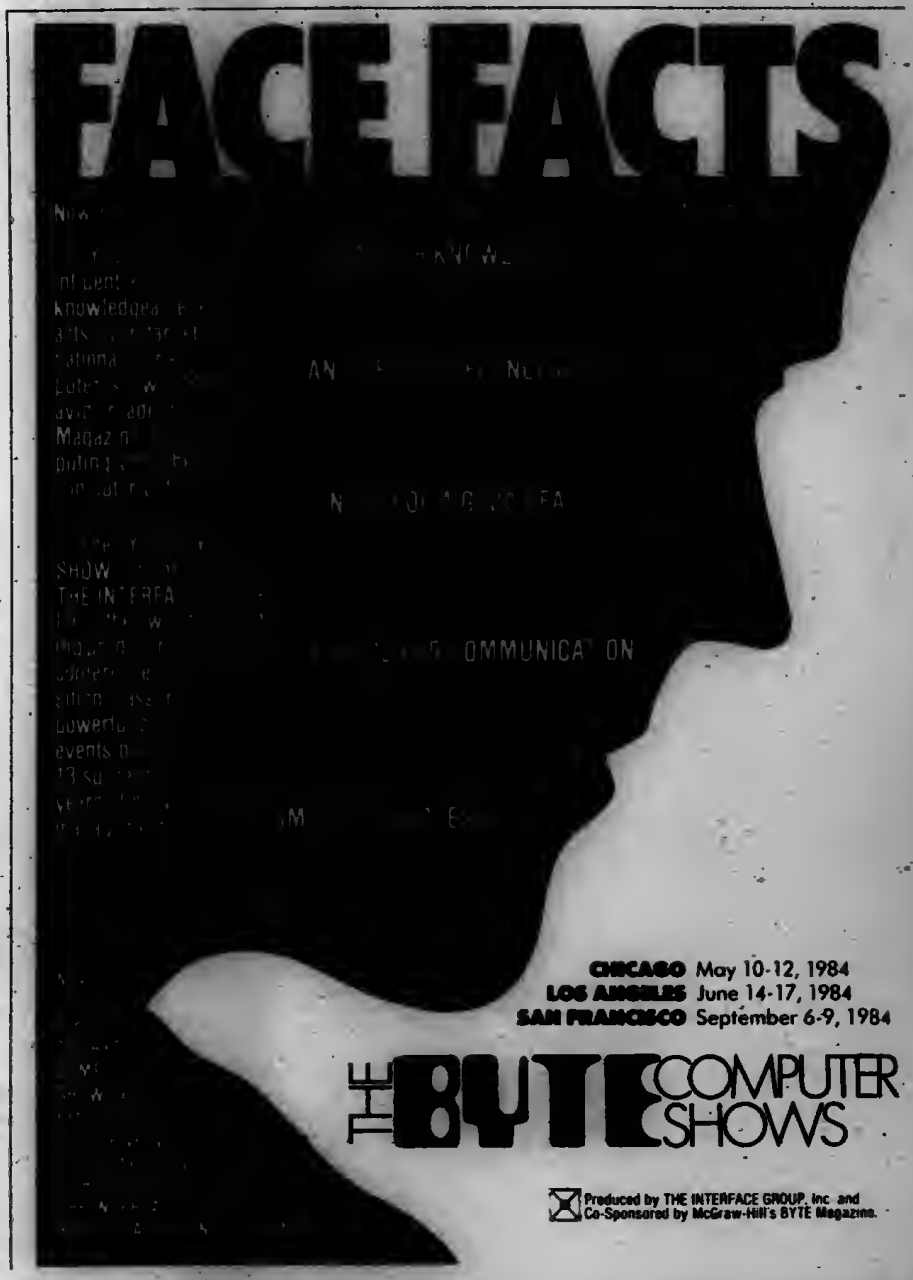
A user should not be expected to learn a new language (nonprocedural or otherwise) for defining the information he requires.

Fourth-generation languages for DP professionals — application generators — will benefit from architectural attention to the same human factors. In addition, the comparison of an application developer to an engineer identifies another key ergonomic factor. The development of an on-line transaction processing application involves a number of distinct tasks:

1) User requirements definition.
2) Initial screen format definition.
3) Data requirements definition.
4) Translation of 1 and 2 into "control blocks."
5) Procedural code generation.
6) Controlled interactive testing.
7) Installation into production environment.
8) Documentation.

The "application engineer" should be able to reference common components such as a data base segment layout from a "parts data base." The application generator should permit the developer to proceed through the various tasks without interruption. Ergonomically, fourth-generation language must provide a workstation environment. Ideal from ADR is a good example of this concept.

While the workstation environment is also applicable to end users,



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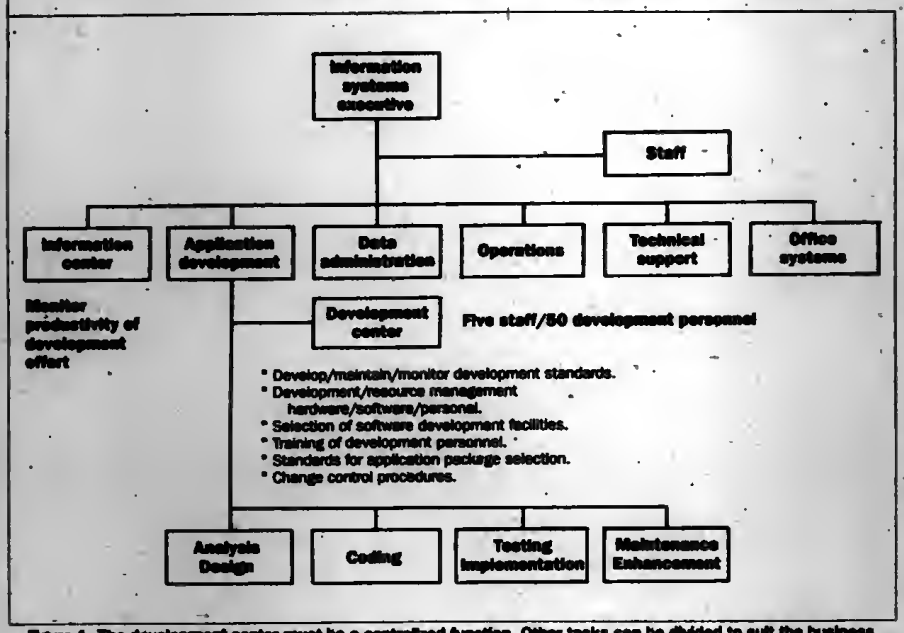

Figure 1. The development center must be a centralized function. Other tasks can be divided to suit the business.

it should be a prerequisite for a fourth-generation language geared to the professional DP developer.

In reality, business objectives, human factors and technological integration are one in the same issue: a management strategy for fourth-generation tools. More accurately, it is a strategy for more productive information processing activities.

A final case study demonstrates the interrelationship of business, ergonomic and technological issues. Senior management of a financial institution commissioned a corporatewide productivity improvement project. MIS was instructed to take the lead in the effort and focus attention on its own operation. A DP staff attitude survey indicated that development personnel felt severely underequipped to do their job. The battle cry was: "We need a fourth-generation language!"

In the background was an overall employee feeling of "occupational claustrophobia." In a corporatewide survey, 89% of all employees indicated the working environment was an inhibitor. It had become a business issue because of very high turnover. Fifty-six percent of management personnel indicated that availability and accuracy of information was a problem.

MIS management was convinced that a programmer productivity system was a necessity. A consultant was retained to perform a productivity audit and recommend a specific application generator.

The consultant reviewed the work habits of development personnel. A common problem surfaced. Design review meetings with end users were held in cramped conference rooms or in the cafeteria. Programmers had to travel long distances to find an unused terminal. In several areas, six to 10 terminals were located in one small room with little or no desk space. In most cases, the room had no windows (at least none were visible through the dense smoke).

The consultant's study concluded that the overall work environment most become more sensitive to human factors. Meeting areas were established specifically for design reviews. The technical staff's work area was redesigned. Gradually, a migration to an application generator and an end-user fourth-generation language was undertaken.

The environment is now ergonomically sound. The application generator selected is terminal-intensive. MIS management recognizes this fact, and in line with the environmental improvement program, the majority of development personnel have a dedicated terminal available.

End users are not particularly self-sufficient. An "end-user computing facility" (information center) has been built and staffed with full-time DP personnel trained in the use of the end-user fourth-generation language. The technicians help the users, being careful not to become a new breed of programmer.

The facility is located next to the data administration group. Data analysts were frequently involved in first-time consultations with users of the fourth-generation language. Data availability is addressed before commitments are made to a user and before a user begins to demand that which is not readily available.

A year after the migration began, the major problems identified in the

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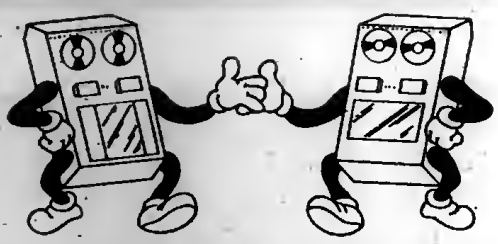

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attitude survey have been overcome, as reflected in a new survey.

Backing up management

In addition to the technology being considered from a human perspective, a management strategy must also include clearly defined organizational responsibilities for fourth-generation tools. If the recommended subdivision of fourth-generation languages is applied, then application development centers and information centers become natural "homes" for each category of fourth-generation language.

Without the subdivision, the application centers may end up "competing" with information centers for new tools. Generally, application generators are best suited to the former environment, information generators to the latter (end-user oriented) environment.

These organizational entities are also essential in a human factor-oriented fourth-generation strategy. Application development center and information center "consultants" must realize that marketing the new tools is as important as, if not more important than, understanding the new tools.

A programmer will accept an application generator much better if the application development center consultant understands the tool and is sensitive to a programmer's uneasiness with the new technology.

As with any new technology in a business environment, an organizational entity must be assigned the responsibility for the ongoing support of new tools. Without this responsibility, a management strategy may be disabled by the very tools on which it is based.

Complementing technologies

It is often difficult to separate human factors from management strategies as fourth-generation languages are investigated. Simply being conscious of one may lead to the other. Another approach, if ergonomics and strategies have been overused in your environment, is to consider implementing techniques along with the new tools that together will define a fourth-generation methodology for information systems development.

Prototyping is perhaps the most publicized fourth-generation methodology. At its most fundamental level, it is a technique for more effective end-user information requirements definition. Successful implementation of the technique, however, requires a balanced emphasis on the three elements that have been the focus of this discussion — business orientation, ergonomic sensitivity, technological integration.

By definition, a prototype is the first thing or being of its kind, an original working model. Prototyping, then, is the development of the original, working model. Clearly, the development of a prototype requires at least three components:

- A statement of requirement — what is the model to do?
- "Manufacturing resources," which facilitate the engineering of the prototype.
- An environment for testing the "first thing or being of its kind" which approximates, if not duplicates, the working environment of the end product.

The development of simulations and prototypes is a design catalyst.

In reality, technological and economic barriers inhibited the generation of simulations and prototypes in conventional operational business system development. The system development life cycle became more and more bureaucratic as organizations attempted to control the process better and assure a higher quality product.

The techniques result in tangible entities which translate concept into requirements into general design into detail production specifications. In a past implementation environment, the techniques are valuable control points for maintenance and redesign.

This process is an engineering life cycle. In theory, it is the way in which data processing systems are built. "Third-generation" system development life cycles suffered from too much preaching about and too little practice of:

- User-defined and approved system requirements.
- User participation in design reviews.
- Controlled development, for instance, program walk-throughs.
- Change control procedures to avoid unwarranted "corrective design."

In reality, technological and economic barriers inhibited the generation of simulations and prototypes in conventional operational business system development.

The system development life cycle became more and more bureaucratic as organizations attempted to control the development process better and assure a higher quality end product.

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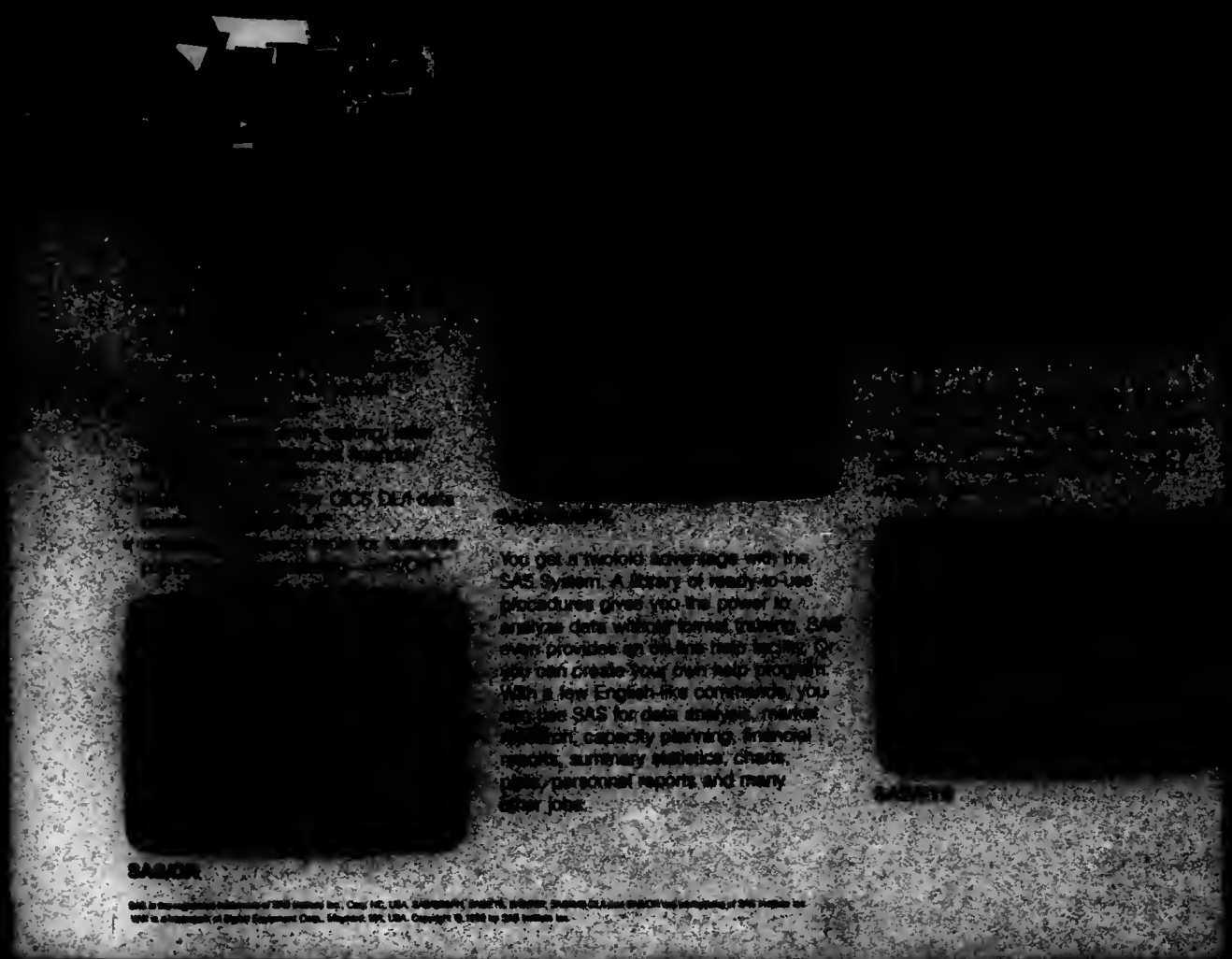

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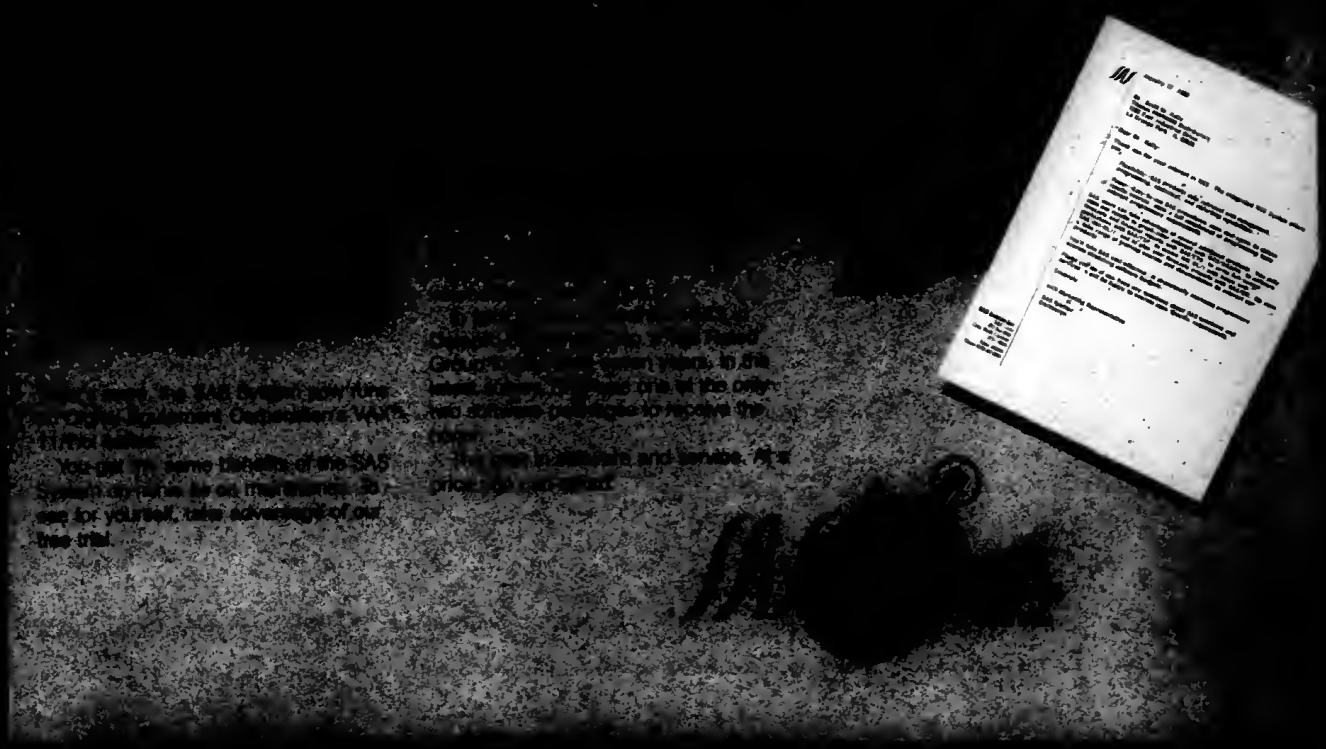


for example, a simulation should be developed to refine user requirement statements and to establish an initial architecture for implementing the application. The simulation is developed interactively, focusing initially on external capabilities and then proceeding to processing flow. User involvement in the simulation process is key.

However, there is a catch-22 to simulation. Users see what they want and they want it delivered quickly. But the simulation isn't a working system. Do you bore or intimidate your users with the necessity for detailed program specifications, data normalization and data base design? No — you move forward with the application engineering effort (see Figure 2).

Prototype development follows the simulation effort. The detail design of the application begins to take shape. But the prototype begins to deliver basic functionality to an end user. Once the prototype has been implemented and perhaps refined, a detail design can be "frozen." Production application development can then begin. This might involve fine tuning the current prototype. In certain cases, it might involve a major effort to produce an application that will operate efficiently in high-volume processing environments. The prototype typically will not involve integration with other major applications.

"Application engineering" is a reorientation of a third-generation development life cycle that incorporates the distinct techniques of simulation and prototyping. The benefits? Applications that can be engineered faster with fourth-generation languages, with a higher degree of end-user satisfaction and business impact as a result of the emphasis on user defined requirements.

Skepticism about the feasibility of these techniques arises from two major misconceptions. The first is that in a typical IBM mainframe environment, there is not a single software product that enables the implementation of the simulation/prototyping techniques. The second is that the techniquee are not applicable to large on-line data base systems; the misguided assumption is that prototyping is a euphemism for end-user computing.

Products such as Ideal and IDMS clearly offer the promise of fourth-generation languages to major operational system development projects. Benefits will be attained based upon a carefully directed use of the technology. Prototyping in this context is a strategy for the successful use of fourth-generation products.

If you work in an IMS installation, don't despair. There are products that enable the implementation of these techniques.

The subdivision of "fourth-generation language" into applications generators and information generators is directly related to a successful implementation of simulation/prototyping. When functionality, efficiency and long-term viability are the dominant business design criteria for a major information system, a formal, rigorous approach is mandatory. Application engineering with a heavy dose of simulation and prototyping mixed with conventional techniques is such an approach. A fourth-generation language application generator will be the enabling technology.

When discussion of a new information system centers on "end-user involvement," "throw-away system," "decision support" and "ad hoc specifications," prototyping is not a miracle solution. An information generator will probably be the enabling technology. In this context, a rigorous methodology is not required and, if applied, probably would be an inhibitor.

Prototyping is synonymous with a management strategy for effective requirements definition for major business information systems.

If prototyping is casually embraced as a replacement for third-generation structured techniques and bureaucratic system development life cycles, then it will remain a mystery if not give way to mayhem. To be sure, the fourth-generation tool will be blamed if productivity does not improve: "The tool just wasn't the right one for prototyping — the and user couldn't figure out how to use it." The strategy for fourth-generation language must include a revised approach for requirements definition. Prototyping is a technique for that.

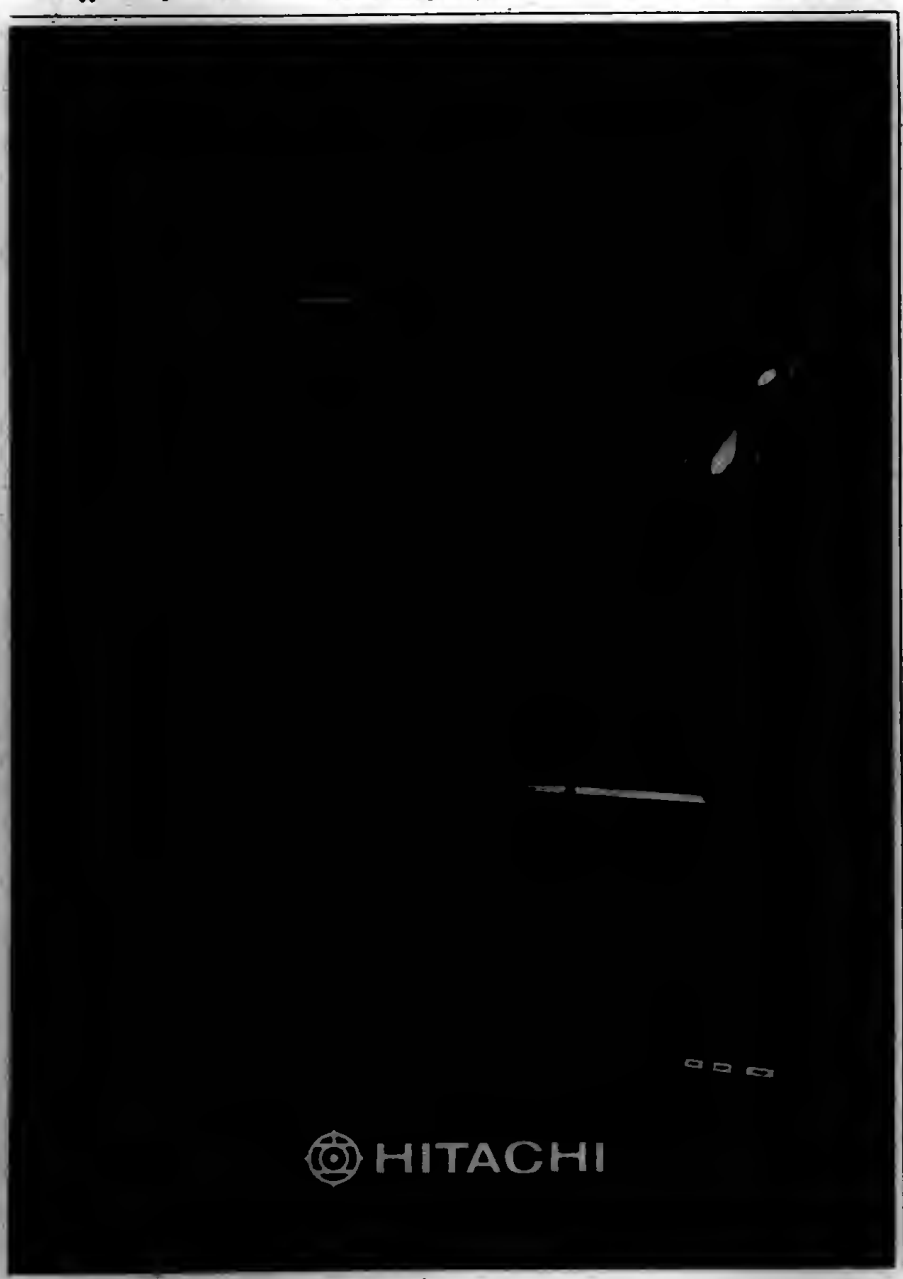
The ability to develop prototypes becomes another evaluation criterion. But prototyping will involve different characteristics in transaction processing vs. information-oriented applications. Seldom will an application generator produce prototypes for end-user-oriented applications. The reverse is also true.

Degrees of development

It must also be realized that prototyping will be used in conjunction with conventional approaches to systems analysis and design. In some cases, a developed prototype may deliver 95% of the required processing. In other cases, it will only scratch the surface. In the latter case, prototyping must be viewed as the tip of an iceberg — a fourth-generation systems development life cycle. In this context, "prototyping" is synonymous with a management strategy for fourth-generation languages.

What then are the keys to the resolution process that will translate fourth-generation tools into business benefits?

First, commit to the development of an information systems technology strategy. Establish at least one full-time resource (call the person



"director of technology assessment") with the ongoing responsibility for the strategy. The person will not be an expert in every area of technology, but through research, will identify technology alternatives and then look to specific areas within the MIS organization to assist in detail evaluations.

Second, classify and understand the technology. The primary technology focus of this discussion was on fourth-generation languages. Subdividing those languages into application generators and information generators permits a more manageable evaluation of the facilities and requirements of specific products.

Third, do not overlook the fact that the new tools may require new techniques to guide the initial and ongoing utilization. Techniques such as prototyping reinforce the subdivision of fourth-generation languages. Prototyping may be another base for end-user computing if the right tool is selected for information generation. In other cases, prototyping will require a transaction processing generator to facilitate requirement definition for production applications.

Fourth, and perhaps most important, consider the people who will use the application and information generators. Involve them in the selection, train them in the implementation and monitor and support their utilization of fourth-generation language. The application development center and information center are the functional areas that will translate the technology strategy into a tactical plan for the effective use of fourth-generation language.

Fifth and finally is an issue that has been transparent to the discussion thus far. In a specific organization, basic business data is relatively stable, while associations between data can be dynamic. New information requirements may involve different levels of summarization and/or different combinations of the basic data. The development of a data architecture for a business implements the data base concept in a very pragmatic way. The data architecture will identify what data is necessary for a business, where it is and how it is used and will assist in establishing controlled access to data from a wide variety of processing tools, including fourth-generation languages.

About the author

Paul R. Hessinger is director of Advanced Technology Research for Computer Task Group, Inc. in Buffalo, N.Y. He conducts approximately 125 professional seminars annually. Among those last year were "Programmer of the Future: Person or Machine," a featured presentation at the International Association for Systems Management Conference in Boston, and "The Fourth Generation Blueprint for a Data Base Environment," for the International Data Processing Management Association conference in Baltimore.

Hessinger lectures for organizations such as the Gartner Group on strategic planning and the future direction of information systems technologies.

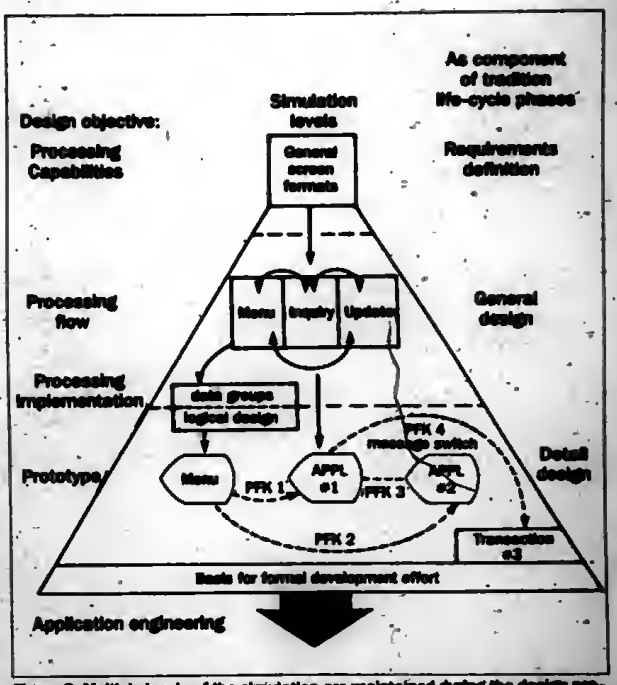


Figure 2. Multiple levels of the simulation are maintained during the design process. Throughout the development life cycle, any requested changes can be evaluated at the highest level to assess impact fully.

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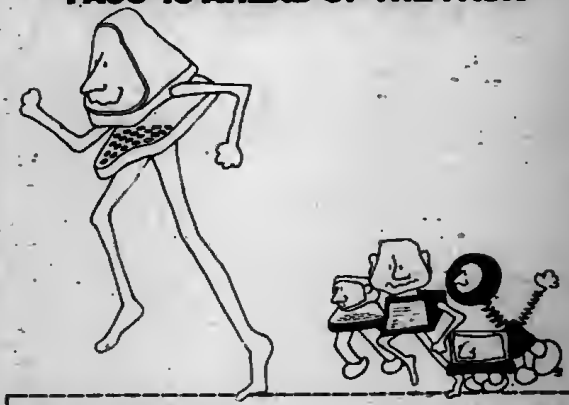

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IN DEPTH

Roles DP managers must play

A manager must wear several masks — adopt roles — to be successful. He needs to improve his communication skills as if he were perfecting a hobby or sport. There are three masks he should learn to assume, as should any entry-level manager and probably senior executives as well.

By Marsha Sinetar

William James, considered by some psychologists a more accurate thinker than Freud in defining human behavior, wrote decades ago that if an individual wants to change his personality, he has to change his actions.

Similarly, a manager who wants a better chance at success will benefit from *acting as if* a given role were natural. Large rewards come from having an adaptable personality.

Successful managers communicate like natural, if not born, actors. However, most people trained in technical fields have not learned the finesse and authority of speaking, listening to or directing a group. Being "at home" with others is not necessarily an inborn trait. The technical professional must learn a new cluster of communication skills, which takes time, patience and a lot of practice.

Management communication, linked to the notion of life-as-performance, is not a new concept. However, as the qualifications for professional managers expand beyond just a financial strategic planning profile to include "people skills," the idea is receiving new attention. Now communication skills and management success are linked more tightly than ever.

Italian psychiatrist Robert Assagioli observed, "One of the most important and illuminating aspects of the analogy between acting and life concerns the relations between the personality of the actor . . . and the characters he sequentially impersonates, his 'mask' in a psychological sense."

Managers must play several roles in order to be successful. If their masks reflect only one side of their personality or falsely portray a warm, caring nature, they are miscast, distrusted; their attempts at communication fall flat. When employees feel the boss is a phony, his behavior is often a sign he is unsure of

what role to play.

A manager needs to improve his communication skills as if he were perfecting a hobby or sport. In fact, there are three basic masks he should learn to put on.

Mask 1 — The manager as administrator. How well each department head orchestrates subordinates to achieve scheduled goals makes the difference between mediocre and outstanding performance in this role. Administration is the nuts-and-bolts mask, the technical, organizing, planning and budget management part a manager must play.

Managers must communicate about progress, priorities and schedules. These demands require precise communication, an ability to talk about how each person's job fulfills departmental commitments. This kind of discussion sets the stage for talking about productivity, how the group and/or individuals can accomplish team goals in a systematic and orderly way.

Most managers are pretty good at the technical and organizational aspect of their roles. Retired military officers wear administrative masks particularly well, as do others who are structured, rational and self-disciplined.

A close focus on details helps employees maintain direction — time cards, expense reports, delegation of authority, responsibility and so on. For the manager-as-administrator role, communication is relatively straightforward and objective. These messages can be put on paper, charted and graphed.

Because administrative communiques can be easily measured, the role requires an accurate reporter of facts.

Other key management roles may be more complicated, thus more easily botched. Rarely are administrative managers successful in senior management roles unless they are also adept at playing other parts. If, however, an administrative type owns the company, then everyone else must be a good actor.

Mask 2 — The manager as leader. Managers must not only be good leaders; they must also act like leaders. Few are gifted enough to play this role without training, but not many organizations provide such development opportunities. This lack probably accounts for many of the ills industry has experienced in the past decade — labor-management problems, high employee turnover and apathy, absenteeism, lack of team spirit and others.

To understand the manager-as-leader role requirements, it is helpful to know just what a leader is and does. Oddly, it is the leadership dimension of a manager's performance that industry has most frequently overlooked, underdeveloped and misunderstood. All too many companies promote people into supervisory positions and then into upper management roles without ever considering their leadership talents.

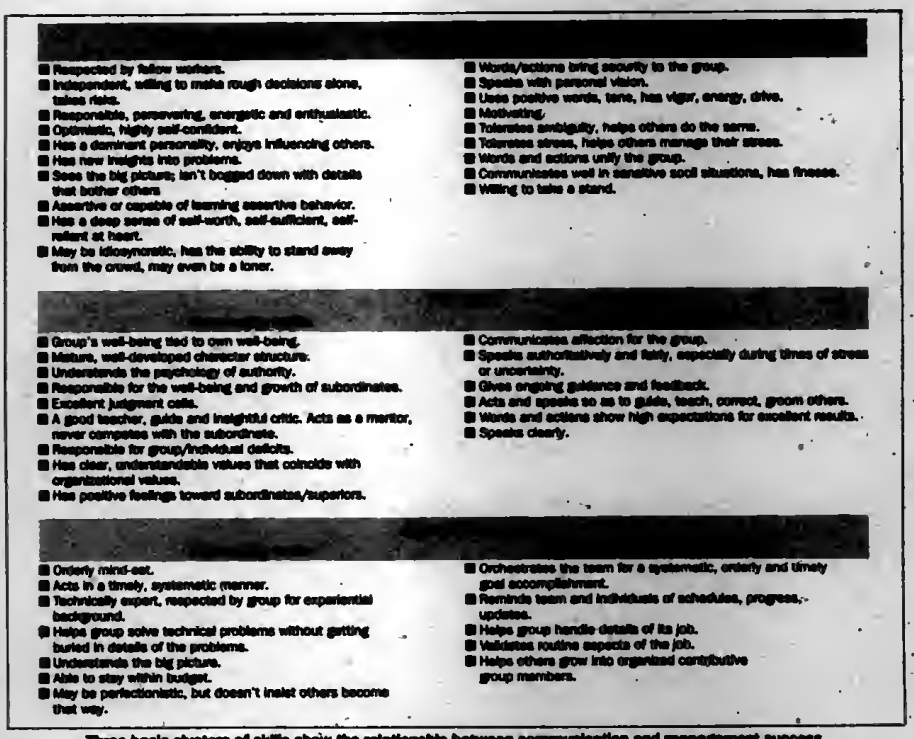
Seniority, technical expertise, politics and other irrelevant criteria are the usual factors in promoting people to "starring roles." I've often heard young enthusiasts from my corporate client organizations say they are "due a promotion" because they've been around a given period of time. Companies that market the "due-a-promotion" policy based on longevity are asking for mediocre managers.

There are at least 20 personality traits that go into a leader's character structure, involving maturity of thinking, interpersonal skills and outward behavior. Two years ago, I was on a select panel of social scientists and educators gathered by the California State Department of Education to see if we could identify the characteristics and behavior of leaders.

Leadership was determined to depend on both character structure and on the leader's situation. Leaders were identified as people whose actions and words brought solidity and cohesion to a group. Leaders were found to be skilled at pulling people together — nonleaders, on the other hand, had a disruptive effect. The nonleader increases the anxiety of the group and divides it. Anyone who has ever heard his superior communicate a new company policy in a lukewarm, apathetic or mechanical fashion understands how easy it is to separate a group from organizational goals or values.

To play the leadership role correctly, it is not enough to have a leader's personality. Because leadership is dependent upon the situation a manager is in, it is necessary to act and speak in leader-like ways in specific work-related arenas. Leading does not necessarily mean being popular (doing or saying the expected, approved-of thing). It does mean that managers who can act like leaders bring long-range unity and cohesion to all elements of their departments.

Executives possess varying degrees of talent when it comes to playing the leadership role. Some



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managers have departments beset with problems after the merger is announced. Others continue running a smooth, business-as-usual shop, even helping subordinates cope with uncertainty, ambiguity or the possible loss of a job. These people are, without exception, leaders.

Acting or talking as a leader means a willingness to be visible, authoritative and responsible. These traits are found only in people who have cut the umbilical cord with group opinion and who are able to stand alone when the going gets rough. It takes time to develop the latent leadership characteristics in the average manager's personality, especially if the manager lacks self-confidence.

Only a leader can develop leaders. Only a person who has pulled away from the crowd and has done the personal confrontation work that is a prerequisite to developing leadership skills can inspire these abilities in others.

Only a leader can develop leaders. Only a person who has pulled away from the crowd and has done the personal confrontation work that is a prerequisite to developing leadership skills can inspire these abilities in others.

Although American industry loves short workshops and one-day seminars because they are cost-effective and save time, it is highly doubtful that such sessions can develop leadership behaviors that stem from a strong sense of self. A developmental program conducted within an organization over a period of time is more likely to cultivate leadership talents, depending on who facilitates the program.

Many executives favor training programs because they are "safe." In a classroom situation — even if involved in team games or simulations — they can often camouflage their tendencies to avoid the rough issues. In the work setting, such camouflages are likely to be revealed over a period of time.

Mask 3 — The manager as parent. One of my more distinguished and intellectual clients said to me in a moment of utter frustration, "I don't want to be a parent to my staff! They're adults. But they're driving me crazy with their time-consuming bids for my attention and approval. They're acting just like my own kids, but I don't want to be their father."

This senior manager reluctantly came to understand that one of his key functions is to act as a parent authority figure on occasion. That management role is one of the masks he must wear if he is to be effective. When he needs to set standards, when he wants to correct or upgrade work or simply say how he wants a matter handled, he is, like it or not, stuck with a parenting role just like every other manager is. Like it or not, communication happens in the perceiver, and employees perceive managers as authority figures when certain types of communications are delivered.

The manager issues parental messages based on a right/wrong or teaching function. This part implies correction, appraisal, judgment, guidance and even nurturing. Reviewing performance, for example, is a routine part of management's job. But little, if anything, is said about the resulting parenting/teaching aspect involved in this procedure. Managers who have clear, understandable positions, who are willing to comment when work is marginal or when it is superior, can function successfully as parent figures.

Some managers, considered old-fashioned or even backward by peers, are successful because they firmly provide what their staff needs in the parenting domain. One of the most effective managers I've ever met is a woman with little or no formal education or management training. She also happens to be the mother of nine children who has realized on her own the connection between her role as a parent

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Acting or talking as a leader means a willingness to be visible, authoritative and responsible. These traits are found only in people who have cut the umbilical cord with group opinion and who are able to stand alone when the going gets rough.

and what she does daily on the job with subordinates.

The manager who is unafraid of the parental role and who is adaptable to its communication requirements is the one who will probably avoid being victimized by subordinates. Employees respond to authority in much the same way they did to their parents. Office "complainers," for example, are typically people who received attention as children when they complained about little things. The office "star" learned in childhood that the surest way to get love and attention from adults was to excel.

Then there are the employees who simply detest any and all authority. Some of the most difficult employees to deal with are aggressive types or passive-aggressive types who hide their anger at authority figures but sabotage direction and correction. These employees hide so much anger that they defeat themselves and others, although on the surface they are compliant.

It boils down to this: Managers may not want to be parents on the job, but they are anyway by virtue of employees' response to authority. Managers can only be fully successful when they accept and understand the psychological aspects of the parent role and communicate accordingly.

More managerial roles

There are, of course, other roles to be played — the manager as mediator, for example. The manager with peacemaker abilities can be a star. Most managers, however, are not natural mediators. A growing number of companies retain executive mediators who can objectively help pull diverse perspectives into a whole as they solve problems. In the process, these mediators also act as role models for those who are involved in the mediation process.

Then there's the manager-as-coach role. (Like versatile actors, the manager who fits the leader/parent role would also fit well here.) A coach must be able to motivate his staff. The manager who has coaching ability can add color, vigor and vision to otherwise dull situations. Most companies, aside from sales organizations, are short of coach/manager types. This shortage is especially acute in engineering, high-tech companies and certain legal/health-care businesses where task-orientation is the focus of communication.

Organizations rarely make clear distinctions about the variety of roles and forms of management communication. Business schools have not focused enough attention on the psychological side of management. It has become increasingly difficult to translate the word "manager" into a comprehensive term with behavioral ramifications.

However, it is still possible to enlarge the conceptual framework of the management function. By visualizing the variety of roles and the many communication nuances each mask demands, managers can become more flexible in responding.

About the author

Dr. Marsha Sinetar is president of Sinetar & Associates, Inc. in Santa Rosa and El Segundo, Calif. She is an organizational psychologist, mediator and futurist. Her firm provides management advisory functions to corporate top management in human resource planning and development and mediation.

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MICROCOMPUTERS

Software piracy: How serious is it?

MICRO BITS

THOMAS W. MADRON

Over the last two or three years, few issues in microcomputing have received more attention than software piracy. It is difficult to define the meaning of software piracy. A narrow and somewhat legalistic approach would suggest that software piracy is the duplication of copyrighted materials for resale. But a broader interpretation may also be acceptable, namely, the reproduction of copyrighted software for redistribution, regardless of whether it is for resale.

Aside from the ambiguity in its definition, the issue of software piracy is further confused by the software licenses implicitly accepted by those of us who buy microcomputer software. Those licenses typically stipulate that it is a violation of the license agreement to use the software on more than one machine, even if those machines are personally owned by the buyer and used by no one else. This is somewhat akin to the idea of a book publisher attempting to license a book to be read only in the front bathroom and not in the back bathroom.

It is apparent that the current copyright laws are not always relevant to computer software. This is because copyright laws come out of a tradition oriented to printed matter rather than electronic media.

For example, it is allowable under the copyright laws for small parts of copyrighted material to be reproduced for educational purposes. This is fine for printed material, but it is difficult to imagine a situation in which one could take and reproduce a small segment of machine language from a compiled computer program that would serve any meaningful purpose, educational or otherwise.

Clearly an author, or other holder of copyright, should have protection. But we have not yet arrived at a clear-cut answer to what that means in terms

See PIRACY page 92

Windowing seen gaining praise
But pundits question its usefulness

By Paul Hamaskowski
CW Staff

One of the hottest buzzwords in the microcomputer industry these days is multiple windowing. This feature allows users to monitor up to seven concurrent functions on a single CRT screen, often giving the user the ability to hop from one application to another and to share data among several related programs. But how useful is the feature? Microcomputer vendors will say you cannot live without it. But some industry watchers believe multiple windowing may be a passing fancy.

"Many vendors are designing windowing products, yet its usefulness hasn't been proven," noted Janice Antonellis, research manager for software and services at International Data Corp. in Framingham, Mass. "It may be useful for multitasking applications, but I am not sure it has many other practical applications."

In fact, some industry analysts contend windowing packages, like the environment offered with Apple Computer, Inc.'s Macintosh, are no better than integrated applications, which share data without requiring that a user change diskettes. The advantage is the integrated applications are all visible on one screen, requiring the user to press a function key to move from spreadsheet to word processing functions.

Other windowing software, such as Digital Research, Inc.'s Concurrent CP/M 3.1 and the package that works with Apple's Lisa system, offer multitasking capabilities. "The user can monitor one application's progress while using a different application," noted Gary Gysin, director of product marketing and manager of the Operating Systems Division at Digital Research.

"For example, a user could work on a spreadsheet while a data base sort is completed."

The number of windows offered by various packages typically runs from four to seven. But how many can the user use at one time?

"Most of our users monitor two or three

See WINDOW page 92

DM Data offers management aid

SCOTTSDALE, Ariz. — DM Data, Inc. has announced a management planning aid for scheduling estimated procurement costs for very large-scale integrated circuits.

Called the Computer-Aided Management Planning System (Camps), the planning aid consists of a workstation that utilizes an "expert" software package, which provides artificial-intelligence-like assistance for solving problems on a lap-type portable computer.

Camps follows English prompts and features a program checklist; suggested approaches; standard cost factors for planning, tooling, prototypes and circuits; projected standard time schedules; probability of success factors; and graphic comparisons of approaches.

A Camps package costs $2,850, including expert-system software (Camps I) preprogrammed in a briefcase-size portable computer; a set of instructions and notes; and a half-day seminar covering the system operations and applications.

More information is available from DM Data, located at Suite 700, 6900 E. Camelback Road, Scottsdale, Ariz. 85251.

INSIDE

Systems/72
Printers/Plotters/72
Board-Level Devices/74
Auxiliary Equipment/74
Micro Software/75

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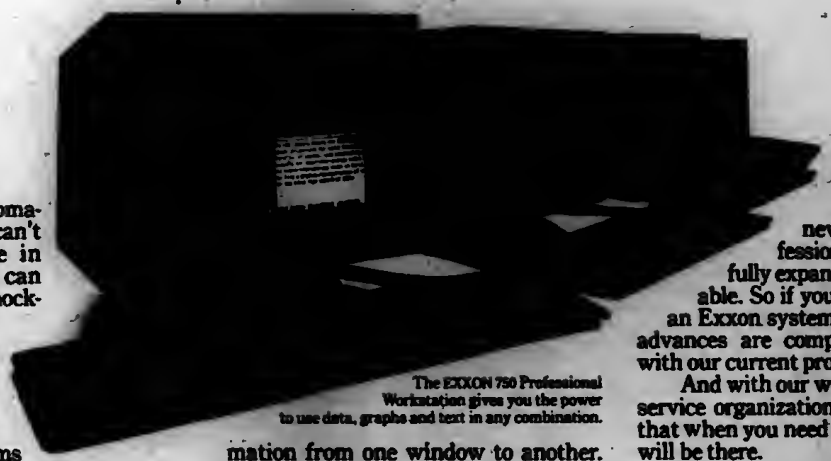

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MICROCOMPUTERS

SYSTEMS

ELECTRO DESIGN, INC. IMP-12

Electro Design, Inc. has announced the IMP-12, a microcomputer that uses IBM's PC-DOS 2.0 operating system and is compatible with the IBM Personal Computer.

According to the vendor, the 12-slot processor can handle up to two half-height drives, either floppy or hard disk.

The floppy disk drives are 5¼-in., double-sided, double-density with 500K bytes of unformatted storage, according to the vendor.

The hard disk drives are available with a 13.34M-, 26.70M- or 40M-byte capacity.

The IMP-12 CPU is Intel Corp. 8088 based and features a read-only memory resident Basic I/O that offers Microsoft, Inc.'s MS-DOS calling conventions, plus extensions for scientific and industrial applications, the vendor said.

The list price of the IMP-12 starts at $3,428.

Electro Design, 690 Ranchero Drive, San Marcos, Calif. 92069.

ET COMPUTER SYSTEMS ET-2010

ET Computer Systems has introduced ET-2010, a microcomputer that uses a Zilog, Inc. Z80 microprocessor.

The computer features 64K bytes of random-access memory (expandable to 1M byte), a 9-in. monitor, a parallel port and a serial port, according to the vendor.

The system uses ETPM II, an enhanced version of Digital Research, Inc.'s CP/M Release 2.2 operating system. Word processing, spreadsheet, general ledger, accounts receivable, accounts payable and payroll with job costing applications are bundled with the system, the vendor said.

The system costs $1,349.

ET Computer Systems, 8161 Broadway, Lemon Grove, Calif. 92045.

ALSPA COMPUTER, INC. MC-4010; MC-4020; MC-4035; MC-4060

Alspa Computer, Inc. announced four desktop microcomputers that can be tied into the firm's Alspa-Net local-area network.

The desktop units feature a Zilog, Inc. Z80A microprocessor, 64K bytes of random-access memory, two RS-232 serial ports, two parallel ports and an RS-422 network interface. Bundled software includes a proprietary operating system and an electronic mail package, the vendor said.

The MC-4010, with a 10M-byte hard disk drive, costs $4,495; MC-4020, with a 20M-byte hard disk drive, sells for $5,495; MC-4035, with a 35M-byte hard disk drive, costs $6,495; and MC-4060, with a 50M-byte hard disk drive, costs $7,495.

Alspa Computer, 477 Division St., Campbell, Calif. 95008.

APPLICATION INNOVATIONS Point-of-sale system

Application Innovations announced a turnkey point-of-sale system based on the IBM PCjr.

The system features a 9-in. monochrome display, 128K bytes of random-access memory, a 40-col. printer, 370K bytes of disk drive, point-of-sale software and a cash drawer with change holder, according to the vendor.

A user can change product descriptions and prices, the vendor said.

The system costs $3,250.

Application Innovations, 1550 Old W. Henderson Road, Columbus, Ohio 43220.

MORROW, INC. MD11 price increase

Morrow, Inc. has raised the retail price of its MD11 hard disk desktop microcomputer system from $2,745 to $2,995 because of what the firm said are unexpectedly high manufacturing costs.

"Manufacturing costs, particularly those associated with outside vendors, have been higher than anticipated," a spokesman said.

The MD11 is an 8-bit personal/business computer system based on Digital Research, Inc.'s CP/M operating system. Shipments began in November.

Morrow, 600 McCormick St., San Leandro, Calif. 94577.

PRINTERS/PLOTTERS/PERIPHERALS

FUTURENET CORP. D1-Plot/HP

Futurenet Corp. has announced a pen plotter interface that allows engineers to plot schematics generated on Futurenet's IBM Personal Computer-based Dash-1 schematic designer on the Hewlett-Packard Co. HP 7580, 7585 and 7470 plotters.

According to the vendor, the interface was designed for producing schematics that require hard-copy output in sizes ranging from 8½ by 11 in. to 34 by 44 in.

There is a choice of roller-ball, fiber-tip or liquid drafting pens of various colors and widths, the vendor said.

The package includes the Bausch & Lomb DMP-41 plotter with pedestal and the Dash-1 driver software, according to the vendor.

Available now, the D1-Plot/HP is priced at $600.

Futurenet, 21018 Osborne St., Canoga Park, Calif. 91304.

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By David A. Lien. Details virtually every significant BASIC word used by every BASIC-speaking computer in the world. It is the most complete collection of BASIC words ever with strategies programmers can use to convert the many different dialects to their computers. **Publisher's Price: $19.95.**

2. BASIC AND THE PERSONAL COMPUTER.
By Thomas A. Dwyer and Margot Critchfield. Learn to program in BASIC within eight hours. Includes: computer graphics, program development, data bases, and more. Also, many step-by-step examples of word processing, computer games, and computer simulations. **Publisher's Price: $16.95.**

3. CP/M AND THE PERSONAL COMPUTER.
By Thomas A. Dwyer and Margot Critchfield. Down-to-earth explanations break CP/M into basic components for easy mastery of filing, debugging, editing, information flow, and more. Includes coverage of how to use popular commercial CP/M application programs. **Publisher's Price: $19.95.**

4. THE LITTLE BOOK OF BASIC STYLE: How to Write a Program You Can Read.
By John Nevison. Challenges the reader to go beyond computer literacy to *fluency*; reaches how to write programs of less than one page, and encourages thoughtful program organization. Covers everything from algorithms to games. **Publisher's Price: $6.25.**

5. DATA FILE PROGRAMMING IN BASIC: A Self-Teaching Guide.
By LeRoy Finkel and Jerald R. Brown. For both hobbyists and professionals who want to add data file programming to their computing capabilities. Includes: maintaining data files, modifying existing programs, and writing your own. **Publisher's Price: $12.95.**

We'll keep you up-to-date with the rapidly growing and everchanging world of computers... from the latest developments in software and improvements in hardware, to the newest innovations in programming techniques, and more.

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In response to the increasingly heavy involvement of DP/MIS people in computer-aided manufacturing (CAM) and computer-aided engineering (CAE), *Computerworld* is preparing a Special Report that focuses on CAM/CAE, manufacturing resources planning (MRP), robotics, inventory and shop floor control.

We'll also cover the effect these new technologies are having on traditional manufacturing operations. And on the delicate relationships between traditional DP departments and the factory automation specialists.

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LOS ANGELES/Bernie Hockswender, Bob Hubbard, Bill Healey, (714) 261-1230

BOARD-LEVEL DEVICES

DY-4 SYSTEMS, INC.
DSTD-187 card

Dy-4 Systems, Inc. has introduced the addition of the DSTD-187 processor card to its line of STD bus products.

The DSTD-187 is an Intel Corp. 8088-based product incorporating the Intel 80130 RMX processor, two RS-232C serial channels and optional Intel 8087 math coprocessor, according to the vendor.

Both Zilog, Inc. Z80 and Intel 8088 bus architectures are supported. According to the vendor, 1M-byte memory addressing is supported.

The product costs $584.

DY-4 Systems, Suite 302, 1475 S. Bascom Ave., Campbell, Calif. 95008.

METRABYTE CORP.
Model P10-12

Metrabyte Corp. has announced a parallel, digital I/O interface board, Model P10-12, that plugs into the IBM Personal Computer XT.

According to the vendor, the P10-12 provides 24 transistor-to-transistor and diode-to-transistor logic-compatible lines.

Other features include an interrupt input and external connections to the microcomputer's bus power, the vendor said.

The price is $89 in single quantities.

Metrabyte, 254 Tosca Drive, Stoughton, Mass. 02072.

NUMBER NINE COMPUTER CORP.
Revolution graphics board

Number Nine Computer Corp. introduced its Revolution graphics board for the IBM Personal Computer.

The board uses a NEC Information Systems, Inc. 7220 16-bit graphics coprocessor, the vendor said.

A display can use two modes: pixel and plane. With pixel mode, the user can modify a single pixel across 8-bit planes of random-access memory in one read or write operation, according to the vendor.

In plane mode, the user can modify eight pixels in a 1-bit plane, the vendor said.

The board costs $945.

Number Nine Computer, 691 Concord Ave., Cambridge, Mass. 02138.

HELIONETICS, INC.
APB-3000PC series

Helionetics, Inc. has announced a series of single-board array processors that is said to increase the computational speed of an IBM Personal Computer or look-alike.

The APB-3000PC series reportedly enables the Personal Computer to perform mathematical calculations up to 10,000 times faster than a Personal Computer not equipped with the device, according to the vendor.

It runs Fortran or Basic under IBM's PC-DOS operating system and is programmable. A high-level assembler and monitor package is also available for custom microcode development, the vendor said.

Prices start at about $2,000 for a 16-bit math integer APB-3000PC board and $4,250 for a 16-bit integer or 24-bit full floating-point board, a spokesman said.

Helionetics, 17312 Eastman St., Irvine, Calif. 92714.

AUXILIARY EQUIPMENT

DATA DECISIONS
Microcomputer service

Data Decisions has announced an information service for microcomputer hardware and software that reportedly was designed for corporate or institutional buyers of multiple systems.

Called Microcomputers, a key feature of the service involves the testing of major software products by the vendor's laboratory staff.

Areas covered by the service include microcomputers, software, expansion/extension cards, communications and peripherals, accessories and support equipment, according to the vendor.

A one-year subscription to the service includes two loose-leaf volumes updated monthly, 12 supplements, 12 newsletters and unlimited free telephone consulting. Charter subscriptions are available for a limited time for $625.

Data Decisions, 20 Bruce Road, Cherry Hill, N.J. 08034.

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We're back

MICROCOMPUTERS

MICROPRO INTERNATIONAL CORP.
Startutor series

Micropro International Corp. has introduced a line of training tools, the Startutor series.

The on-disk interactive computer-aided instruction (CAI) tutorials include lessons for the firm's Wordstar (word processing) and Infostar (data base management system).

Videotape instruction is available for Wordstar and will soon be available for Infostar, Calcstar (the firm's electronic spreadsheet) and Starburst (the firm's program that reportedly links the other products). The self-paced tape provides the trainee with interactive training, reinforced with graphics and animation.

Users who have Wordstar Version 3.3 for IBM's PC-DOS operating system can purchase the Wordstar Quick Lesson CAI for a handling charge of $5 each until Feb. 29. The extended lessons feature seven sessions, each approximately 30 minutes long. Each extended lesson CAI product is priced at $79.95.

Micropro's Wordstar Video Training Tape, in ½-in. VHS and ½-in. Betamax formats, will be available in the spring for a suggested retail price of $89.95. The ¾-in. U-Matic format will be priced at $129.95, the vendor said.

Micropro International, 33 San Pablo Ave., San Rafael, Calif. 94903.

ADVANCED DATA SUPPORT SYSTEMS, INC.
Advanced Data Analyzer

Advanced Data Support Systems, Inc. has announced Advanced Data Analyzer, a hardware and software enhancement that monitors RS-232 asynchronous data communications.

The product taps into any line between two devices. It displays and stores data transmissions and allows the user to examine data, the vendor said. The data analyzer transmits user-defined character strings and can perform a byte/bit error rate test, according to the vendor.

The product costs $1,995.

Advanced Data Support Systems, Suite 1, 217 Mt. Vernon Ave., Bakersfield, Calif. 93307.

MICRO SOFTWARE

COMMODITY TRADING SYSTEMS
Cats

Commodity Trading Systems has announced the Cats computer-aided trading package for the IBM Personal Computer.

A vendor spokesman said Cats was designed as a tool with which commodity traders can collect real-time market data, analyze price and volume and generate a trade signal based on that information and the trader's financial position and objectives.

The spokesman said that, in addition to historical price and volume analysis, Cats also features a "what-if" simulator to determine the optimum trading parameters for each contract, an updated quote page, data base query and report generation and gross profit summary.

Cats is leased for $40,000/year, which does not include hardware.

Commodity Trading Systems, Suite 107, 11301 Richmond, Houston, Texas 77082.

HUMANIC DESIGN CORP.
MSP

Humanic Design Corp. (HDC) has introduced a human resource management package for the IBM Personal Computer XT. The Microcomputer Personnel System (MPS) was designed for organizations with 200 to 2,000 employees.

MPS reportedly supports all major human resource management functions, stores payroll information and can be linked directly to in-house or payroll services. In addition, MPS can provide complete word processing,

Continued on page 77

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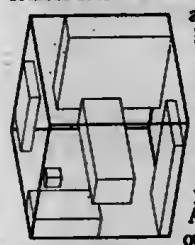

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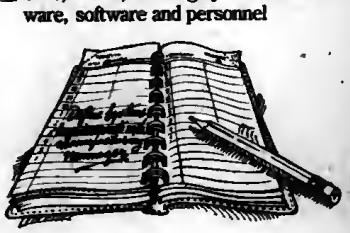

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6303 Ivy Lane
Greenbelt, MD 20770

MARTIN MARIETTA

Martin Marietta Data Systems

MICROCOMPUTERS

Continued from page 76

mail list/merge and electronic spreadsheet capability.

A free-standing, menu-driven system with communications options, MPS requires a Personal Computer XT configuration of a 10M-byte fixed disk, plus 360K-byte capacity diskette drives and 256K bytes of memory.

MPS software is priced at $18,000 with optional rental and/or lease.

HDC, 307 Summit Ave., Mahwah, N.J. 07430.

APPLIED SOFTWARE TECHNOLOGY, INC.
Versaform Release 2.7

Applied Software Technology, Inc. has announced the Versaform Release 2.7 for Texas Instruments, Inc.'s Professional Computer.

Release 2.7, which runs under Microsoft, Inc.'s MS-DOS operating system, is also available for the IBM Personal Computer.

Data entered into the system creates a data base of form records. Data from the data base may be selected, sorted and written to an MS-DOS file for use by word processors, spreadsheets and other programs, the vendor said.

The suggested retail price of Versaform Release 2.7 is $399.

Applied Software Technology, 170 Knowles Drive, Los Gatos, Calif. 95030.

RADIO SHACK
Cobol Instruction

Radio Shack has announced an educational software package designed to teach secondary and college students and adults the fundamentals of programming Cobol.

The package contains a comprehensive manual and a diskette with exercises that can be used with any Radio Shack TRS-80 Model II, 12 or 16 disk system with at least 64K bytes of memory.

Volume One is available for $49.95. Class notes are priced at $9.95 and are sold as an aid to instructors for use in the classroom.

Radio Shack, 1800 One Tandy Center, Fort Worth, Texas 76102.

SIGNUM MICROSYSTEMS, INC.
Documax

Signum Microsystems, Inc. has introduced Documax, an information management package for the Apple Computer, Inc. Apple II microcomputer.

Documax is a document-handling package that features word processing, electronic mail and other text files, the vendor said.

Documax runs on the Apple II, II+ or IIe with 48K bytes of memory. It also runs on the Apple III in Apple II emulation mode.

The product sells for $175.

Signum Microsystems, 130 Mountain Ave., Bloomfield, Conn. 06002.

IDEAWARE, INC.
Idea Processor

Ideaware, Inc. has introduced the Idea Processor, a software package for IBM Personal Computer users.

The Idea Processor combines a card-file-style, free-form file manager with word processing software and can incorporate graphics stored as file cards, the vendor said.

Minimum system requirements are an IBM Personal Computer or compatible machine with 196K bytes of memory. A printer is optional, the vendor said.

The Idea Processor sells for $295.

Ideaware, 235 Lafayette St., New York, N.Y. 10012.

ZOOM TELEPHONICS, INC.
Netmaster

Zoom Telephonics, Inc. has introduced Netmaster, a communications program for Apple Computer, Inc.'s Apple II microcomputers.

According to the vendor, Netmaster can be used with 300 bit/sec modems. The package will receive and transmit any file developed under Release 3.3 of Apple's DOS operating system, the vendor said.

Netmaster is priced at $79. It is sold with Zoom's Netwatcher modem (including a free membership to The Source data base) for $179, the vendor said.

Zoom Telephonics, 207 South St., Boston, Mass. 02110.

DATAMENSION CORP.
Spec

Datamension Corp. has introduced a feature for its Report Manager three-dimensional software, a command language called Exec. The package runs on IBM's Personal Computer.

Exec is a language that uses Basic-like commands or can capture and repeat sequences of keystrokes, the vendor said.

Minimum system requirements are 128K bytes of random-access memory and two disk drives.

The suggested list price of Report Manager is $300.

Datamension, 615 Academy Drive, Northbrook, Ill. 60062.

STONEWARE, INC.
DB Master enhancement

Stoneware, Inc. has enhanced DB Master to include a file converter.

DB Master's file converter reads files created with Software Publishing Corp.'s PFS:File and Visicorp's VisiFile programs into DB Master. It can use alphanumeric, numeric or data fields, the vendor said.

The data base costs $250 and runs on Apple Computer, Inc.'s Apple IIe.

Stoneware, 50 Belvedere St., San Rafael, Calif. 94901.

See MICRO page 78

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MICRO from page 77

SOFTWARE SYSTEMS, INC.
Personal Computer Print Utility

Software Systems, Inc. (SSI) has announced a package that allows a report from an IBM System/34 or System/36 minicomputer to be printed on an IBM Personal Computer.

According to the vendor, the Personal Computer Print Utility converts spooled-print files on the host system to Personal Computer-formatted text files.

The utility was designed for users of SSI's 5251 Model 12 emulation and file-transfer utility to allow off-line storage and printing of spooled reports.

The product is available at a price of $75 for the System/34 and $90 for the System/36, including report program generator source code.

Software Systems, P.O. Box 1766, Jefferson City, Mo. 65102.

PROFESSIONAL MICROSYSTEMS, INC.
Bizplan

Professional Microsystems, Inc. has introduced Bizplan, a software template that enables users to create a business plan and analyze alternative sales strategies under changing conditions.

According to the vendor, Bizplan can run on any system running Digital Research, Inc.'s CP/M operating system. Systems must have a minimum of 48K bytes of random-access memory.

The suggested retail price of Bizplan is $195.

Professional Microsystems, Richardson Plaza, Rt. 309 & Richardson Road, Montgomeryville, Pa. 18936.

LIBRA LABORATORIES, INC.
Gantt-Pack Version 3

Libra Laboratories, Inc. has announced Gantt-Pack Version 3, a menu-driven project management software package for Radio Shack TRS-80 Models I/III and I/12 microcomputers.

According to the vendor, the product is a project control and resource management tool that enables users to store data on each project's requirements. Gantt-Pack can be used to automate drawings, create charts and sort data.

Gantt-Pack costs $395.

Gantt Systems, Libra Laboratories, 495 Main St., Metuchen, N.J. 08840.

GENASYS CORP.
Telios Version 2.0

Genasys Corp. has announced the release of Version 2.0 of its asynchronous communications package, Telios, for the IBM Personal Computer, Personal Computer XT and Personal Computer-compatible computers.

Telios operates at speeds ranging from 110 to 9,600 bit/sec through any smart, acoustic or dataphone-type modem hard wired to a machine or via a network. Its internal buffering is said to allow screen scrolling of at least 250 lines of data during communications. Any additional memory can also be used as a screen buffer, allowing scrolling of more than 250 lines.

Telios costs $119.95, including documentation.

Genasys, Microcomputer Products Group, 11820 Parklawn Drive, Rockville, Md. 20852.

ADDISON-WESLEY PUBLISHING CO.
Micro-DSS/Finance

Prices of Micro-DSS/Finance (DSS/F), a microcomputer financial modeling software package from Addison-Wesley Publishing Co., have been reduced by 33%.

DSS/F is an integrated package that combines financial modeling, graphics and reporting. It can be purchased through dealers or Addison-Wesley at the new prices of $795 for Apple Computer, Inc. versions and $995 for the IBM Personal Computer version, a spokesman said.

Addison-Wesley, Reading, Mass. 01867.

HUMAN SYSTEMS DYNAMICS
PC Statistician

Human Systems Dynamics has introduced a general statistics package for the IBM Personal Computer.

According to the vendor, PC Statistician provides a research data base. The prod-

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uct also offers the graphics options of data set plots, bar graphs, scatter plots and curve fittings, the vendor said.

System requirements are an IBM Personal Computer with 128K bytes of memory, two double-sided, double-density disk drives and Release 2.0 of IBM's PC-DOS. A printer is optional.

The price of the package is $300.

Human Systems Dynamics, Suite 222, 9010 Reseda Blvd., Northridge, Calif. 91324.

I.P. SHARP ASSOCIATES, LTD.
APL/PC

I.P. Sharp Associates, Ltd. has introduced an implementation of the APL development language for the IBM Personal Computer.

Called APL/PC, the package is compatible with Sharp's mainframe software products. This is accomplished by basing the microcomputer product on a System/370 emulator.

Therefore, all APL constructs available in a mainframe environment are also available in the microcomputer environment. These include all primitive functions and operators and all data types, including packages and enclosed arrays, the vendor said.

The system runs as a user program under the IBM Personal Computer operating system PC-DOS Version 1.1 or 2.0. The package includes the interpreter, the file system, the session manager, several auxiliary processors and the utility software.

The price of APL/PC is $375.

I.P. Sharp Associates, Suite 1900, 2 First Canadian Place, Toronto, Ontario, Canada M5X1E3.

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STRATEGIC SOFTWARE SYSTEMS, INC.
Bottomline V

Strategic Software Systems, Inc. has introduced Bottomline V, a financial modeling, planning and forecasting package.

The product operates with spreadsheet programs, such as Lotus Development Corp.'s 1-2-3 and Visicorp's Visicalc. The package runs on the IBM Personal Computer XT, the Xerox Corp. 820, Digital Equipment Corp.'s Rainbow and Apple Computer, Inc.'s processors. The package also runs on Microsoft, Inc.'s MS-DOS and Digital Research, Inc.'s CP/M operating systems.

The suggested retail price is $295.

Strategic Software Systems, Suite 200, 1200 Dove St., Newport Beach, Calif. 92660.

ZYLAB CORP.
Zyindex

Zylab Corp. has introduced Zyindex, an information search and retrieval package that finds information in any Ascii-based text files. The package runs on the IBM Personal Computer, Personal Computer XT and compatible systems.

According to the vendor, Zyindex stores information from documents created with a word processing package or obtained from other public data bases. Users retrieve information from their files by entering search requests on any topic.

Zyindex requires 96K bytes of memory and two disk drives.

The list price of the product is $295.

Zylab, 233 E. Erie, Chicago, Ill. 60611.

PERSOFT, INC.
Smarterm 100

Persoft, Inc. has announced Smarterm 100, a terminal emulation/file transfer package for the IBM Personal Computer and compatible systems.

The product is said to allow the Personal Computer to function as a Digital Equipment Corp. VT100, VT101, VT102 or VT52 CRT terminal and to transfer Ascii or binary files between the Personal Computer and a host computer system.

Smarterm 100 runs under any version of IBM's PC-DOS operating system and can be installed on hard disk, the vendor said.

It requires 128K bytes of memory, one double-sided diskette drive, an asynchronous adapter and either the monochrome display or an 80-col. color monitor, according to the vendor.

It is priced at $149.

Persoft, 2740 Ski Lane, Madison, Wis. 53713.

Continued on page 90.

MICRO from page 79

DATA CONSULTING GROUP
PC File; PC Screens and Menus

Data Consulting Group has announced two utility products for the IBM Personal Computer running Microsoft, Inc.'s MS-DOS and compatible operating systems.

PC File Utilities is a series of programs designed to facilitate file management. According to the company, the programs allow the user to print, display or edit random files by entering the file name; print or display sequential files; and display data simultaneously in four formats: character, Ascii, hex and bit flag.

PC Screens and Menus is a menu and screen generator that creates Basic screens for data entry. Once the screen is drawn, it can be saved in a file and accessed by any program.

The utilities cost $50 each, require less than 64K bytes of memory, a monitor and one or two single- or double-sided diskettes.

Data Consulting Group, 12 Skylark Drive, Larkspur, Calif. 94939.

MYCROFT LABS, INC.
Mite/MS

Mycroft Labs, Inc. announced Mite/MS, a menu-driven communications program that runs under Microsoft, Inc.'s MS-DOS operating system.

Mite/MS features user-selectable options to capture text from or send to any asynchronous, Ascii, on-line system, according to the vendor. A user can define 10 programmable macro strings which can be invoked by a function key, the vendor said.

Mite/MS costs $195.

Mycroft Labs, Suite B188, 9639 N. Monroe St., Box 68, Tallahassee, Fla. 32303.

PHASER SYSTEMS, INC.
Vdam

Phaser Systems, Inc. announced Virtual Diskette Access Method (Vdam), a software tool that allows IBM Personal Computers to access and store IBM mainframe data.

With Vdam, the mainframe appears as an infinite set of diskettes to any program running on the Personal Computer, according to the vendor. The user stores and accesses mainframe data in a format identical to that on the Personal Computer.

The system operates under IBM's TSO.

The package costs $600 for mainframe software and $300 for each Personal Computer attached to the mainframe.

Phaser Systems, 24 California St., San Francisco, Calif. 94111.

DATA MANAGEMENT ASSOCIATES, INC.
Magic

Data Management Associates, Inc. has introduced Machine Generated Integrated Code (Magic), a programming language which the company claims increases programmer productivity tenfold. The package runs on microcomputers using Digital Research, Inc.'s CP/M operating system.

The language features internal data areas with variable buffers and dynamic allocation, screen formatting and editing, the ability to mix assembler language anywhere in Magic source code, string manipulation capability and control-conditional compilation of source code, according to the vendor.

Magic for CP/M costs $795. It costs $995 for microcomputers using CP/M 86 or MS-DOS, an operating system from Microsoft, Inc.

Data Management Associates, P.O. Box 4340, Wilmington, Del. 19807.

INFORMATION BUILDERS, INC.
Focus for IBM XT/370

Information Builders, Inc. has announced the availability of its Focus nonprocedural data base and information management package for the IBM Personal Computer XT/370.

Focus, operating under the IBM VM/CMS environment, reportedly combines a relational data base and screen management facilities with an English nonprocedural language for queries, formal reporting, graphics, statistical analysis and financial modeling.

Information Builders reports that users of the desktop XT/370 using IBM's VM operating system on mainframes can access their information centers with Focus. The users reportedly can use English commands to analyze files on their CMS minidisks.

Focus on the XT/370 is licensed as a rider to a user's existing mainframe license. The purchase price for one to eight XT/370 machines is $8,400, and the lease price is $375 per month.

Information Builders, 1250 Broadway, New York, N.Y. 10001.

COLLINS & ASSOCIATES, INC.
Cpert; File-It; Plot-It; LC Data

Collins & Associates, Inc. has introduced four business programs: Cpert, File-It, Plot-It and LC Data.

According to the vendor, all the programs were designed to run on either the Hewlett-Packard Co. HP 86 or HP 87 microcomputers, with memory requirements ranging from 64K bytes to 160K bytes, depending on the program.

Cpert was designed for managers to use in planning a project. It enables the user to focus attention on the plan, measure progress and take corrective action. It requires 160K bytes of memory, according to a spokesman for the vendor.

File-It is a data file management package with a capacity of 65K bytes of memory, according to the vendor spokesman. Records can be sorted on any field for the whole file or selected parts of the file. In displaying or printing records, the fields can be arranged in any order, and the display can be vertical or horizontal. It requires 128K bytes of memory, the spokesman said.

Plot-It is a program for plotting angle or multiple line curves and performing linear regression curve fits of curve data. The program is menu-driven. Manipulation of data can be performed, and statistical analysis

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can be done to give the mean, variance and coefficient of variation. It requires 96K bytes of memory.

LC Data is a learning curve program that provides a tool for production, marketing and general management users to make decisions on manpower, prices and materials. The program can calculate production costs or hours and then forecast future unit- and lot-production hours and costs. It requires 64K bytes of memory.

Programs are supplied on 5¼-in. floppy disks. Prices are $175 for Cpert, $100 for File-It, $150 for Plot-It and $95 for LC Data.

Collins & Associates, 187 Flying Mist Isle, Foster City, Calif. 94404.

BUSINESS SOLUTIONS, INC.
Jack2

Business Solutions, Inc. has introduced Jack2 for the Apple Computer, Inc. Apple IIe. The Jack2 is an integrated software package that does word processing, spreadsheet analysis, charting and data base management tasks on the same screen without windows.

According to the vendor, Jack2 was originally designed for the IBM Personal Computer.

Jack2 features commands displayed on a two-line area at the top of the screen, handles multiple columns of text on the same page and can hide confidential information in the middle of the text.

All screen information, including the spreadsheet and the bar chart, is printed out on a single page the same way it appears on the screen, the vendor said.

Jack2 is priced at $395, according to the vendor.

Business Solutions, 60 E. Main St., Kings Park, N.Y. 11754.

STAR ENTERPRISES, INC.
Stardriver-I

Star Enterprises, Inc. has introduced Stardriver-I, a package that enables the Hewlett-Packard Co. HP 9000 Model 20 microcomputer to support multiple users in Basic.

According to the vendor, multiple users may interact via remote terminals for graphics as well as program development and execution.

The software is priced at $1,045, the vendor said.

Star Enterprises, 310 Crestwood Drive, Selma, Ala. 36701.

SOFTLOGIC SOLUTIONS
Doubledos

Softlogic Solutions has introduced Doubledos, an operating system enhancer that lets the IBM Personal Computer and Personal Computer XT microcomputers perform two simultaneous functions. It does not require any software modification.

According to the vendor, Doubledos acts as an extension to the capabilities of IBM's PC-DOS, either Release 1.1 or 2.0.

Doubledos can run on systems with as little as 128K bytes of memory, depending on the application, though 192K bytes of memory are recommended by the vendor. There is no need for the user to buy additional hardware, terminals or cables, the vendor claimed.

According to the vendor, Doubledos works by dividing a system's memory into two areas, one for each program running. The memory can be divided in any way the user chooses.

The price of Doubledos is $299, the vendor said.

Softlogic Solutions, 530 Chestnut St., Manchester, N.H. 03101.

OPUS CORP.
Workstation Emulator

Opus Corp. has introduced the Workstation Emulator, which allows an IBM Personal Computer or Personal Computer XT to act as a Hewlett-Packard Co. HP 250 workstation.

According to the vendor, HP 250 software features such as screen-labeled soft keys, forms and video enhancements are emulated. Several additional features extend the emulator's applicability, including an Ascii-Anal mode for autodial modem control, data logging to disk files and local printer support.

The product costs $500, according to the vendor.

Opus, 20351 Century Blvd., Germantown, Md. 20874.

BAILEY & ROSE LTD.
Compact

Bailey & Rose Ltd. has added a prototyping tool for the IBM Personal Computer to its Act/1 family of productivity software.

Called Compact, the product was designed to facilitate the development of prototypes and allow the user to test design concepts and specifications, as well as demonstrate working models. It includes screen development functions and logic plan facilities.

Compact requires an IBM Personal Computer or compatible system with 256K bytes of memory, two double-sided, double-density diskettes or one hard disk, IBM's PC-DOS operating system, Release 1.1 or 2.0 and a color graphics board or monochrome adapter. It costs $1,500.

Bailey & Rose, 650-1033 Davie St., Vancouver, B.C., Canada V6E 1M7.

NEW MEDIA GRAPHICS CORP.
Graphsver listing

New Media Graphics Corp. has offered a free listing of specific features its Graphsver 9600 software driver that runs under IBM's PC-DOS operating system.

The graphics driver allows color graphics to be controlled by the IBM Personal Computer, and the graphics

Continued on page 94

NCR

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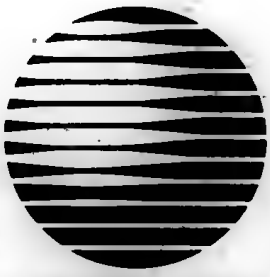

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MICROCOMPUTERS

Continued from page 81

can be overlaid on video coming from videodisk, videotape or TV cameras. The combined pictures can be displayed on any monitor or recorded on videotape, the vendor said.

New Media Graphics, 279 Cambridge St., Burlington, Mass 01803.

VIKING ASSOCIATES
Firefile; Nativelinx

Viking Associates has introduced Firefile and Nativelinx communications packages for users of Apple Computer, Inc. Apple II+ and IIe microcomputers.

Firefile allows the user to transfer files between micros at speeds up to 38,400 bit/sec, or approximately 90 page/min, the vendor said.

The Nativelinx 3270 system provides an emulation of a remote IBM 3270 display terminal system with the Apple II+ or IIe. The package operates at line speeds of 1,200 to 9,600 bit/sec in a half-duplex mode over full-duplex facilities, the vendor said.

The Firefile package is priced at $250. The Nativelinx package is priced at $845.

Viking Associates, P.O. Box 263, Colorado Springs, Colo. 80901.

ADDISON-WESLEY PUBLISHING CO.
Micro-DSS/Analysis

Addison-Wesley Publishing Co. recently announced an analytical software package for the IBM Personal Computer that is said to bring decision support analysis to managers' desks.

Micro-DSS/Analysis reportedly provides statistics, report writing, graphics, data base management facilities and the ability to perform ad hoc analysis.

The package costs $495.

Addison-Wesley Publishing, Reading, Mass. 01867.

DUNBAR-RIDGE CORP.
Filedriver

Dunbar-Ridge Corp. has introduced Filedriver, an integrated set of utilities for Digital Research, Inc.'s CP/M or MP/M and Musys Corp.'s Turbodos operating systems.

Filedriver operates on any file and accesses files independently of user area or attribute-flag status, according to the vendor. Utilities can be accessed in five ways: file selection, file processing, user interaction, file protection and on-line display.

Filedriver costs $95.

Dunbar-Ridge, 102 Sterling Court, Syosset, N.Y. 11791.

AMERICAN PLANNING CORP.
Megabasic

American Planning Corp. announced Megabasic, a programming language that reportedly can address 1M byte of random-access memory.

Megabasic features an execution speed reportedly six times faster than Mbasic from Microsoft, Inc. Other features include variable names, which can be 255 characters long, and a trace-and-edit capability, according to the vendor.

Megabasic runs under MS-DOS from Microsoft and the CP/M 86 operating system from Digital Research, Inc. The programming language costs $400.

American Planning, Suite 423, 4640 Duke St., Alexandria, Va. 22304.

DCD CO.
Job Shop Control version

DCD Co. announced an IBM Personal Computer XT-compatible version of its Job Shop Control package.

The package includes job costing, payroll, accounts payable, accounts receivable and general ledger applications, the vendor said. The job costing module features job status reports, daily production figures, monthly statistics, efficiency figures, job costs and due dates for jobs.

The job-costing application costs $2,900; the other four packages cost $900 each. Together, the five applications cost $6,000.

DCD, 1601 W. River Road N., Minneapolis, Minn. 55411.

BELLESOFT, INC.
Entry System for Programs

Bellesoft, Inc. has introduced a language-oriented editor for computer-aided programming on IBM's Personal Computer using the Pascal and C languages.

Entry System for Programs is said to check programs for syntax errors and automatically format code for readability, saving compiling and debugging time.

ES/P is priced at $249 for Pascal on a single-machine license and $349 for Pascal and C.

Bellesoft, Suite 150, 2330 Northup Way, Bellevue, Wash. 98004.

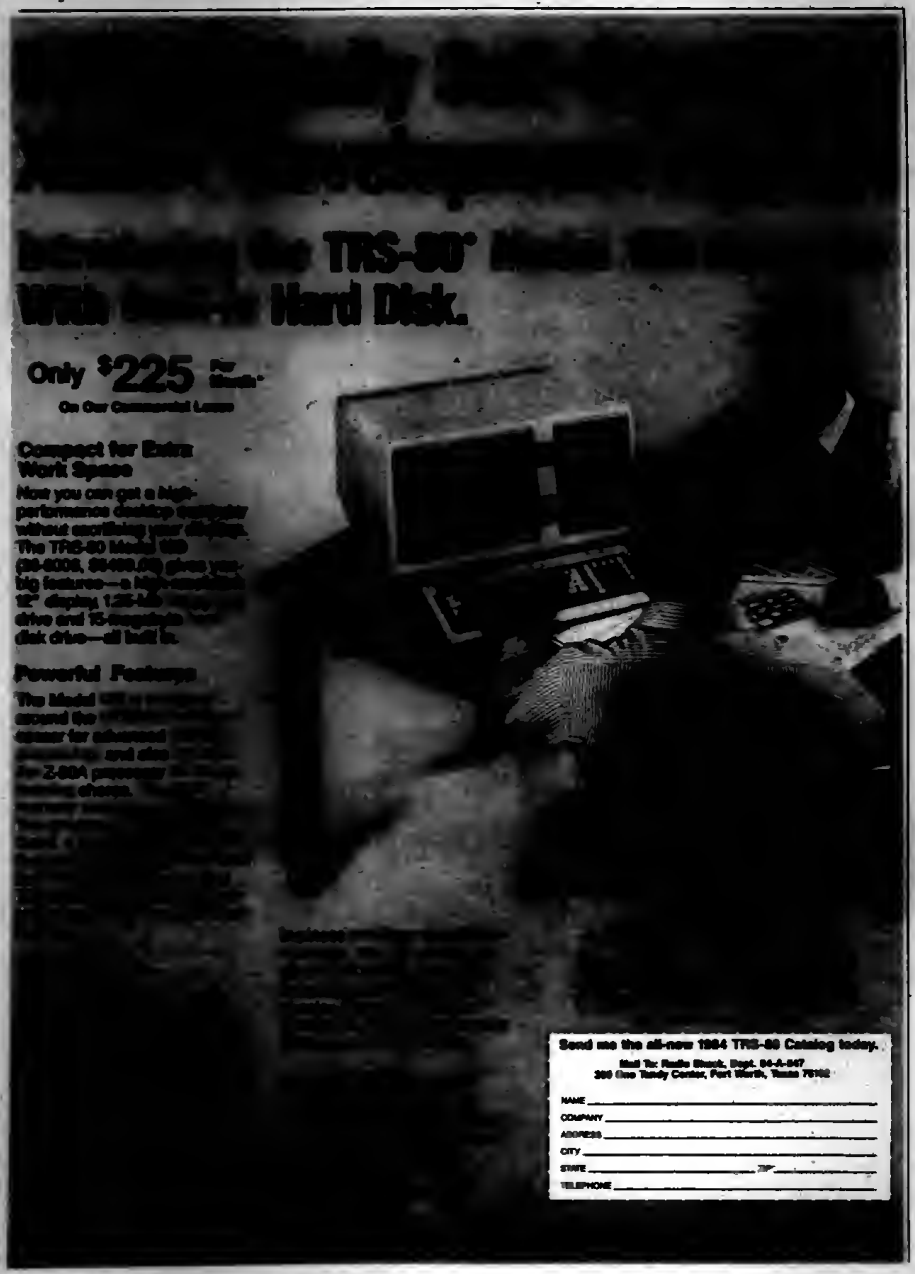
REMROL COMPUTER SERVICES, INC.
Screen.cob Version 2.0

Remrol Computer Services, Inc. has announced Version 2.0 of its Screen.cob Cobol screen code generator for use with Microsoft, Inc.'s IBM Personal Computer Cobol package.

According to the vendor, Screen.cob is a utility program that writes Cobol code for screen set-up in a standard Ascii file text editor.

Screen.cob can also overlay multiple screens and set up a series of screens at one time. The package reportedly will operate on any microcomputer that can run Microsoft's IBM Personal Computer Cobol package. Version 2.0 of Screen.cob is priced at $49.95.

Remrol Computer Services, 215 Brighton Ave., Boston, Mass. 02134.



MICROCOMPUTERS

STOK SOFTWARE, INC.
Backrest enhancements

Stok Software, Inc. has announced enhancements to Backrest, its hard disk backup program.

According to the vendor, Backrest runs on Muxys Corp.'s Turbodos, Microsoft, Inc.'s MS-DOS, IBM's PC-DOS and a variety of local-area networks.

Enhancements include the ability to select predefined backup routines, password-protected file backup and restore, repeated backup to the same hard or floppy disk, improved error handling, optional use of screen color attributes and a German language version with European date format.

Backrest is also available for Digital Research, Inc.'s CP/M, MP/M, CP/Net, CP/M 86, MP/M 86 and concurrent CP/M at a retail price of $180.

Stok Software, 17 W. 17th St., New York, N.Y. 10011.

LOGICAL SYSTEMS, INC.
LS/Host/Term

Logical Systems, Inc. has introduced LS/Host/Term, a host-terminal package developed for use with the Radio Shack TRS/DOS operating system on the TRS-80 Model 4 microcomputer.

The package includes a host system that works in conjunction with the terminal portion of the package. The terminal is designed to emulate an Applied Digital Data Systems, Inc. Adds-5 terminal.

LS/Host/Term is available for $199.

Logical Systems, P.O. Box 23956, 8970 N. 55th St., Milwaukee, Wis. 53223.

COMPUTER TECHNOLOGY GROUP
Unix courses price changes

Computer Technology Group has changed the rental rates for its Unix video tape training courses. Three training courses are available: Unix Overview consists of six modules and costs $2,100, Unix Fundamentals with 15 modules sells for $5,250 and C Language consists of 16 modules and sells for $5,600.

For the first month, the rental prices for any module have been lowered to 20% of purchase price, the vendor said.

In the second month, the rental cost has been lowered to 15% of purchase price. After the second month, rental prices become 10% of the purchase price, according to Computer Technology.

Computer Technology Group, 310 S. Michigan Ave., Chicago, Ill. 60604.

AGS COMPUTERS, INC.
Smart-C

AGS Computers, Inc. has announced Smart-C, a software development tool for any mainframe, mini or microprocessor that supports a C compiler.

According to the vendor, Smart-C is a full screen intelligent editor for constructing C programs. As a structural editor, Smart-C is said to encourage standardization of software layout and style.

The initial version of Smart-C for the IBM Personal Computer will be available in the second quarter of 1984. Pricing will be between $400 and $500.

AGS Computers, 1135 Spruce Drive, Mountainside, N.J. 07092.

ELITE SOFTWARE
Elite-File

Elite Software has introduced a relational data base manager for the Radio Shack Color Computer.

According to the vendor, Elite-File is an all-machine language that allows users to define their own data record structures. It was written by the author of Elite-Calc, Bruce Cook, and uses the same 6809E microprocessor.

The product is compatible with Elite-Calc and Elite-Word.

The program is available on disk and requires 32K bytes of memory and Disk Basic.

The price is $74.50, plus shipping and handling charges.

Elite Software, Box 11294, Pittsburgh, Pa. 15238.

MICROSOFT, INC.
Word merge facility

Microsoft, Inc. has introduced a form letter (merge) facility for its Word word processing software.

According to the vendor, the facility will allow users to produce custom form letters by merging variable information with a standard letter. It is also possible to merge a primary document with data stored in another document or Ascii file, the vendor said.

An expanded printer driver format offers the facility to support all standard printers, including most dot matrix and daisywheel units.

Available the first quarter of this year, the product sells for $25.

Microsoft, 10700 Northup Way, Bellevue, Wash. 98004.

A.B. DICK CO.
Supercalc2

A.B. Dick Co. has announced Supercalc2, a financial spreadsheet software package for use with its Magna III and Magnawriter information processing systems. The systems use Digital Research, Inc.'s CP/M operating system.

According to A.B. Dick, Sorcim Corp.'s Supercalc2 is an enhanced version of Supercalc. New features include a sort facility to rearrange columns and rows, line-item consolidation of spreadsheets, enhanced display and print formatting.

Supercalc2 costs $395. An upgrade to Supercalc2 costs $125.

A.B. Dick Co., 5700 W. Touhy Ave., Chicago, Ill. 60648.

See MICRO page 86

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MICRO from page 85

HUNTER & READY, INC.
VRTX C Interface Library

Hunter & Ready, Inc. has introduced the Lattice C Compiler for its VRTX Interface Library for IBM's Personal Computer.

The VRTX C Interface Library reportedly enables programmers using the vendor's VRTX/86 real-time operating kernel to use the compiler to write real-time applications code in C language for any Intel Corp. 8086-based system.

The VRTX C Interface Library is available on 5¼-in. floppy diskettes with documentation for $750.

Hunter & Ready, 445 Sherman Ave., Palo Alto, Calif. 94306.

OMNI COMPUTER SYSTEMS, INC.
Flash-Com

Omni Computer Systems, Inc. has introduced an integrated electronic mail package that operates on the IBM Personal Computer and PCjr, Apple Computer, Inc.'s Apple II, Radio Shack and other microcomputers.

Flash-Com is said to enable users to implement the U.S. Postal Service's electronic computer-originated mail (Ecom) service.

Features include a mailing list management capability. It also features an Ecom accounting and billing analysis capability, menu screens, help messages and a glossary of Ecom.

The product can interface with software packages, such as Micropro International Corp.'s Wordstar; Professional Software, Inc.'s Wordplus-PC; Lifetree Software, Inc.'s Volkswriter; Perfect Software, Inc.'s Perfect Writer; Ashton-Tate's Dbase II; and Lotus Development Corp.'s 1-2-3.

The product retails for $299.

Omni Computer Systems, P.O. Box 162, Chestnut Hill, Mass. 02167.

MASTER COMPUTER SYSTEMS, INC.
Formix

Master Computer Systems, Inc. has announced a software development tool for the IBM Personal Computer and compatible systems.

According to the vendor, Formix consists of two related components operating under IBM's PC-DOS and Microsoft, Inc.'s MS-DOS operating systems. One is a runtime executive to manage data traffic between the end user and the application program. The other is a set of interactive screen-forms development tools.

Minimum hardware requirements are 64K bytes of main memory and one disk drive.

The product is available now for a single-license price of $495 for the Basic version. Compiler language interfaces are available for a one-time charge of $495.

Master Computer Systems, 9531 W. 78th St., Eden Prairie, Minn. 55344.

MARK OF THE UNICORN, INC.
PCjr compatibility

Mark of the Unicorn, Inc. recently announced that its entire software product line will now operate on the IBM PCjr.

The vendor's products are The Finalword, a word processing package; PC/Intercomm, a communications program; and Mince, a screen-oriented text editor.

The programs for the PCjr require 128K bytes of memory and one disk drive, according to the vendor.

Prices for the PCjr programs are: The Finalword, $300; PC/Intercomm, $99; and Mince, $175, the vendor said.

Mark of the Unicorn, 222 Third St., Cambridge, Mass. 02142.

DATAMENSION CORP.
Exec on Report Manager

Datamension Corp. has announced the addition of a built-in command language to its Report Manager three-dimensional spreadsheet package for the IBM Personal Computer.

Dubbed Exec, according to a vendor spokesman, the command language uses Basic-like commands and can capture and repeat sequences of keystrokes. Thirteen of Report Manager's built-in features are pre-programmed Exec functions. These front-end applications involve loan payments, future and present value, effective interest, amortization and linear regression, the firm said.

In addition to the Exec functions, the package offers more than 40 pre-programmed functions including logarithms, trigonometric functions, inverse trigonometric functions, exponents, square roots and standard deviation, according to the vendor.

The Report Manager package with the Exec command language is priced at $399 for the IBM Personal Computer with 128K-bytes random-access memory and dual disk drives, the firm said.

Datamension, 615 Academy Drive, Northbrook, Ill. 60062.

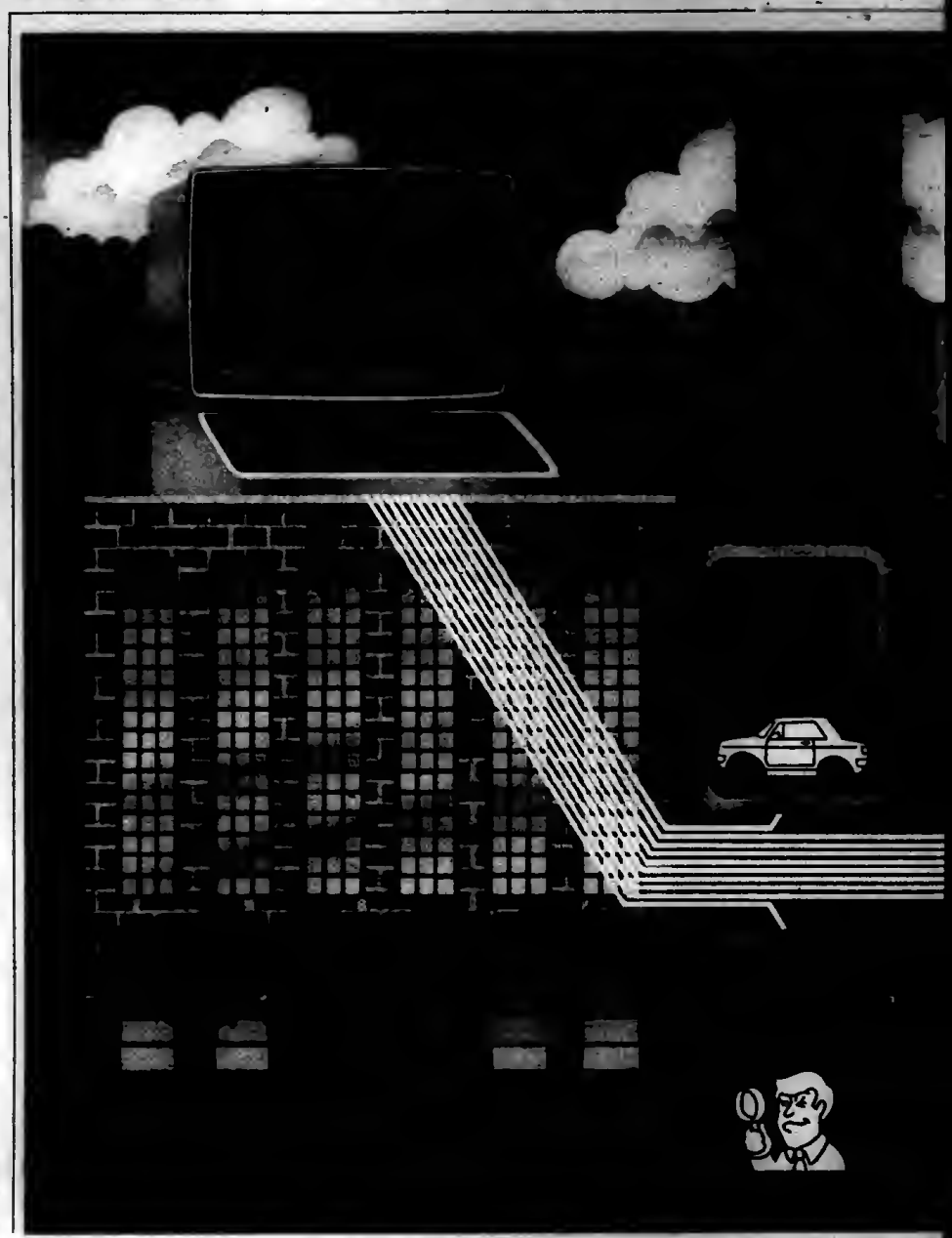
ASSOCIATED TECHNOLOGY CO.
Software Resources

Associated Technology Co. has introduced Software Resources, an artificial intelligence program for the IBM Personal Computer.

The program allows the user to perform "what-if" analysis to determine the effects of various schedules, staffs, programs, documentation, coding techniques and testing conditions, the vendor said.

The program costs $30.

Associated Technology, Rt. 2, Box 448, Estill Springs, Tenn. 37330.



MARTIN MARIETTA DATA SYSTEMS, INC.
Writit

Martin Marietta Data Systems, Inc. has announced a word processing package for IBM microcomputers.

Writit is a private-label version of Softword Systems, Inc.'s Multimate package, Martin Marietta said.

Writit reportedly provides keyboard procedures for insertions, deletions, cursor movement and block manipulation.

The package reportedly allows the user to type Ascii characters into documents for special printer commands and features a 90,000-word spelling checker.

Writit costs $600.

Martin Marietta Data Systems, P.O. Box 2392, Princeton, N.J. 08540.

STRATEGIC SOFTWARE SYSTEMS, INC.
Bottomline-V

Strategic Software Systems, Inc. has announced a corporate financial planning applications system for a variety of microcomputers.

Bottomline-V reportedly allows the user to input basic data variables into a 12-month budget. It then produces five-year pro forma profit and loss, balance sheets, changes in financial position and financial ratio analysis.

The system was designed to run on the IBM Personal Computer and Personal Computer XT, Digital Equipment Corp.'s Rainbow and Kaypro Corp., Apple Computer, Inc. and other microcomputers using Microsoft, Inc.'s MS-DOS and Digital Research, Inc.'s CP/M operating systems.

The suggested retail price is $295.

Strategic Software Systems, Suite 200, 1300 Dove St., Newport Beach, Calif. 92660.

HEWLETT-PACKARD CO.
PFS library; Personal Business Calculator

Hewlett-Packard Co. has announced that the Personal Filing System (PFS) software library from Software Publishing Corp. and HP's Personal Business Calculator package will be added to the software library for the HP 150 touchscreen microcomputer.

The PFS software family includes PFS:File, PFS:Report, PFS:Write and PFS:Graph. PFS:File and PFS:Report will be available for the HP 150 in the first quarter of 1984, while PFS:Write and PFS:Graph will be available in the second quarter.

The Personal Business Calculator is said to provide the functions of an HP-12C calculator on the HP 150. Users can touch the numbers and functions on a screen that resembles the HP-12C to make calculations. The PFS library for the HP 150 is priced at $265. The Personal Business Calculator package is priced at $75 and is available immediately.

HP, 3000 Hanover St., Palo Alto, Calif. 94304.

INSOURCE CORP.
Prestel Terminal Emulation diskettes

Insource Corp. has introduced its videotex family of Prestel Terminal Emulation communication diskettes for the IBM Personal Computer, Apple Computer, Inc. micros and Commodore Business Machines, Inc. Commodore 64.

According to the vendor, the full-color videotex software features an automatic dialing technique and a stored account number and password that allows for simplified login at 300 or 1,200 bit/sec to Insource or any other videotex system operator using Prestel.

The videotex software sells for $199.

Insource, 110 Heritage Sq., 4525 LBJ Freeway, Dallas, Texas 75234.

IDEAWARE, INC.
Grafix Idea

Ideaware, Inc. has introduced the Grafix Idea, a system of three software packages that allows business users to use IBM Personal Computers and compatible microcomputers to act as slide or overhead projectors.

According to the vendor, the slide shows can contain not only graphics images, but also images of text screens such as spreadsheets.

In addition to labeling and titling capabilities, the sketch pad can draw illustrations and flowcharts, with numerous choices of background color, text size and orientation on the screen.

The suggested retail price for the package is $79.95.

Ideaware, Suite 712, 225 Lafayette St., New York, N.Y. 10012.

TERRAPIN, INC.
Logo Version 2.0

Terrapin, Inc. has introduced Version 2.0 of its Logo language for the Apple Computer, Inc. Apple II, II+ and IIe.

Enhancements over the current Version 1.3 include improved "garbage collection" capabilities, support for all four cursor keys on the IIe and the ability to read program files created under Logo.

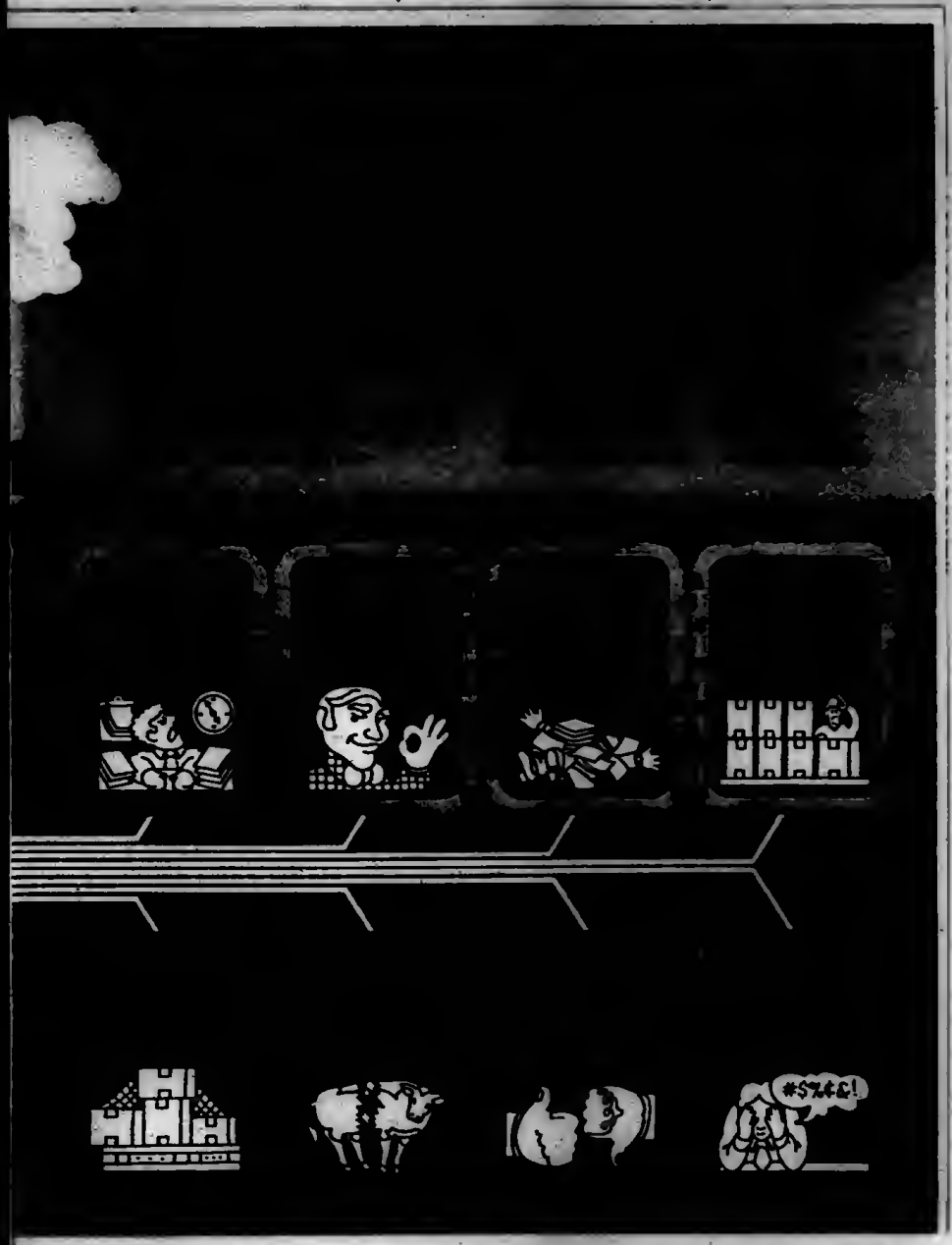
Terrapin has also announced enhanced documentation with a "Words and Lists" chapter in the Logo manual, including recursion, interactive graphics, quizzes, word games and artificial intelligence programming.

The price for the Logo package is $149.95. The "Words and Lists" chapter is priced at $12.50.

Owners of Version 1.3 may update to Version 2.0 for $20 and obtain the "Words and Lists" chapter for $5, the vendor said.

Terrapin, 380 Green St., Cambridge, Mass. 02139.

See MICRO page 88



MICRO from page 87

OPUS CORP.
WS250

Opus Corp. has introduced a workstation emulator that allows an IBM Personal Computer or Personal Computer XT to act as a Hewlett-Packard Co. HP 250.

The WS250 features screen-labeled soft keys and emulation of HP forms and video enhancements. Also included is an Ascii and Ansi mode for autodial modem control, local printer support and logging and sending data to disk files.

The single-quantity price of the WS250 is $500.

Opus, 20251 Century Blvd., Germantown, Md. 20874.

COMPUVIEW PRODUCTS, INC.
Vgraph

Compuview Products, Inc. has introduced Vgraph, a package that is designed for industrial and engineering sites as well as for computer-aided design and manufacturing installations.

According to the vendor, Vgraph emulates a Tektronix, Inc. 4010 graphics display terminal.

It supports the Zenith Data Systems Corp. Z100 and Victor Technologies, Inc. Victor 9000 microcomputers, the vendor said.

The Vgraph disk and manual are priced at $120, according to the vendor.

Compuview Products, Suite 300, 1955 Pauline Blvd., Ann Arbor, Mich. 48103.

ASSOCIATED TECHNOLOGY, INC.
Software Resources

Associated Technology, Inc. has introduced Software Resources, a package that computes optimum resource levels for development projects on IBM Personal Computers or compatible microcomputers.

According to the vendor, the software manager can perform "what-if" studies to determine varying schedule lengths, staff levels, peak staffing, program size, documentation, coding environments, testing environments and 12 other development parameters.

The tool can provide project optimization for software projects requiring 10 to 5,000 man-months of effort, the company said.

The system is described in a user manual that costs $30. The program and manual are available for $175.

Associated Technology, Rt. 2, Box 448, Estill Springs, Tenn. 37330.

MICROTEC RESEARCH, INC.
Paragon enhancement

Microtec Research, Inc. has announced that its line of Paragon cross-assembler systems for microprocessor developers is now available for use on the IBM Personal Computer.

According to the vendor, each assembler includes a library and download utilities. It contains a macro facility, conditional assembly options, list-control operators and cross-reference listing.

Assembler systems are available for most 8-bit and 16-bit microprocessors.

The products require IBM's PC-DOS or Microsoft, Inc.'s MS-DOS Release 1.1 or 2.0 with 128K bytes of random-access memory.

Individual CPU license prices are $600 for 8-bit processors and $900 for 16-bit processors.

Microtec Research, No. 525, 505 W. Olive, Sunnyvale, Calif. 94086.

MONUMENT COMPUTER SERVICE
Report Writer Jr.

Monument Computer Service has introduced Report Writer Jr., a word processing package for the IBM PCjr.

According to the vendor, the program was designed for those who wish to use a PCjr away from the office and later transfer the data directly to an IBM Personal Computer. The program is compatible with many word processor programs and can be used with standard IBM PC-DOS-oriented spelling check programs, the company said.

The Report Writer Jr. requires an IBM PCjr with 128K bytes of memory and a single disk drive. Both IBM graphics and thermal printers can be used with the system, but are not required.

The price of Report Writer Jr. is $80.

Monument Computer Service, P.O. Box 603, Joshua Tree, Calif. 92252.

SOFTWARE SOLUTIONS, INC.
Dataease Version 2

Software Solutions, Inc. has introduced Version 2 of its Dataease relational data base management system for the IBM Personal Computer using IBM's PC-DOS Release 2.0 operating system.

According to the vendor, the product can be menu-driven for novices or worked in the program's expert mode.

It allows the user to obtain information from a large number of files and derive data fields based on information in other fields. It can be used to interpret and manipulate large data bases, the company said.

The product was originally designed for use with Microsoft, Inc.'s MS-DOS Release 2.0 operating system and is also available for Digital Equipment Corp.'s Rainbow, Wang Laboratories, Inc.'s Professional and Texas Instruments, Inc.'s Professional microcomputers. The package costs $595, the vendor said.

Software Solutions, 305 Bic Drive, Milford, Conn. 06460.

See MICRO page 92

SALVO Shatters The Information Barrier!

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SALVO runs on most personal computers. Compatible with MS-DOS, PC-DOS and CP/M. SALVO requires only 64K memory. SALVO is available at your local computer store or you may contact us for information on how to get your own personal preview copy.

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WINDOW from page 69

while a data base sort is completed."

The number of windows offered by various packages typically runs from four to seven. But how many can the user use at one time?

"Most of our users monitor two or three windows concurrently," Gysin said.

"We found that a person has trouble monitoring more than two or three functions," said Joseph Brophy, senior vice-president of data processing at Travelers Insurance Co. in Hartford, Conn.

Users who try to monitor six or seven windows often find their productivity deteriorating rather than improving. "There has to be a point where too many windows detracts from its usefulness," Gysin said.

While it is fairly easy to share data among windowed microcomputer programs, when mainframe data is incorporated into the windowing process, the task becomes more complicated. Only one of the current windowing software offerings, the one used in IBM's 3270 Personal Computer, offers windows that directly access mainframe data.

"With the 3270 Personal Computer, a user can access mainframe data, but it is not easy to use that data with Lotus Development Corp.'s Lotus 1-2-3 or other microcomputer applications," said Ron Goldfarb, manager for office automation at Pratt & Whitney Aircraft Co., based in Hartford. A complicated cut-and-paste procedure is needed to use mainframe data with a microcomputer application, he added.

"While these products are designed for professional managers, I am not sure they spend enough time with a personal computer to benefit from windowing capabilities," Antonellis said.

Managers may not like other windowing features. Many windowing applications use icons to represent functions. For example, a picture of a notepad might be used to represent a buffer. "Icons are useful for some users," Gysin said. "Other users may find them insulting.

"Windowing will prove to be viable for some applications," he said. "Currently, it is the focus of almost every manufacturer's and independent software vendor's development. As other technologies mature, this trend will taper off, but windowing will not disappear."

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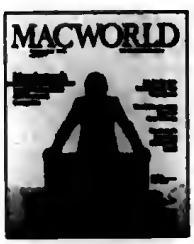
The Macintosh Magazine



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MMM86

PIRACY from page 69

of software for microcomputers. Some questions, such as whether software can be rented or loaned (in the case of libraries) will probably have to be settled in court unless Congress is willing to bite the bullet and come up with a legislative solution.

In order to inhibit unauthorized copying, software houses are using various techniques to copy-protect their programs. This approach to the problem is particularly annoying when attempting to produce an integrated set of software in an organizational environment. It obviously becomes difficult, or impossible, to integrate various programs with menu or windowing systems. This problem is subject to market pressures, however. If consumers, whether individual or corporate, will refrain, as a matter of policy, from buying copy-protected software, software houses will soon see the error of their ways.

After all is said and done, software piracy may not be as significant as some software houses would lead us to believe. It is a problem because of the moral and ethical implications involved (although these are neither neat nor clean). But in attempting to deal with the issue, we should beware of oversimplifying the problem and dealing with it in inappropriate ways.

Finally, software houses must meet the challenge of the software needs of large organizations. Such organizations are often willing to pay a substantial fee for a site license if one is available. And quantity or educational discounts probably do not serve the same purpose as site licenses. When dealing with large organizations, software houses must come up with creative marketing techniques. The alternative is for those organizations, as policy, to buy only software from manufacturers which have such policies, or in the worst case, for individuals within such organizations to obtain unauthorized copies of the software in the mistaken belief that they are saving the organization money.

Madron is manager of Computer Services at North Texas State University, Denton, Texas.

MICRO from page 88

INTEL CORP.
K286

Intel Corp. has announced a general-purpose operating system kernel for its supermicrocomputer, the IAPX 286.

Dubbed the K286, the kernel reportedly gives operating system designers an interface to all the architectural features of the IAPX 286, such as multitasking capabilities, memory management and protection and 1G byte of virtual memory.

The K286 was reportedly designed for real-time industrial automation systems, communications systems such as automated private branch exchanges and business systems.

The product will be ready for release in July. It costs $27,000 for a one-time license fee, including one year of factory support.

Intel, 3065 Bowers Ave., Santa Clara, Calif. 95051.

COMPUTER INDUSTRY

Lotus: Expected to hit No. 2 spot

OUTSIDE LINES

PETER BARTOLIK

With the scheduled announcement last week of the successor to 1-2-3, Lotus Development Corp. has enhanced its formidable market position and is projected to ride success to No. Two on the ladder of top software companies. That's No. Two among *all* software companies, not just vendors of micro products.

The investment firm of L.F. Rothschild, Unterberg, Towbin recently predicted that Lotus in 1984 will bring in revenues of $165.7 million, topping Cullinet Software, Inc. and Microsoft, Inc. and coming up just short of Management Science America, Inc.

Without a doubt, Lotus is the prime example of how the marketplace establishes a standard and the potential riches that can come to those who successfully ride the dynamics of the exploding microcomputer market.

The company raised $1 million in financing in early 1982 and introduced its product in October of the same year, actually shipping the product in January of last year. Less than two weeks ago, Lotus released its annual report showing profits of $14.3 million on revenues of $53 million.

Keys to success

The keys to success were: a solid, state-of-the-art package beating anything then in the field, reliability, canny marketing, timely delivery and solid management.

With IBM expected to ship in excess of two million micros in 1984, and IBM-compatibles adding another solid contribution, plus the potential of Apple Computer, Inc.'s Macintosh, Lotus is in fine shape and serves as a mentor to many other would-be overnight success stories.

There will be problems, however, for the new entrepreneurs.

Foremost, where Lotus established a standard by shipping 90,000 packages in

See LOTUS page 98

Bank software firms see red

Data base task too complex?

By Paul Korzeniowski
CW Staff

For some application software developers, the road leading to the kingdom of on-line, integrated, central data base systems is scarred with huge potholes.

One case in point is Anacomp, Inc., the Indianapolis-based company that is developing the Continuous Integrated System (CIS), an on-line, data base system for banks. The month of January represented the company's high and low points; in the space of that month, it delivered both a pilot version of CIS to the Provident National Bank in Philadelphia and defaulted on a $45 million lending agreement with five banks.

The default was attributed to CIS cost overruns and missed deadlines by Anacomp, which expects to report quarterly losses through the first nine months of 1984. Provident National Bank officials refuse to comment on the pilot project.

But Anacomp's problems are hardly unique. Other vendors have also missed delivery dates, raised prices and rewritten specs during the development of their data base systems.

Insurance Service of America, Inc. (ISA), for example, attempted to develop an on-line data base system for commercial insurance policies. After cost overruns and missed deadlines and before the project's completion, the system was sold to Advanced Technology, Inc., a division of Maryland Casualty Co.

A promise of the '70s

The desire for large on-line data base systems emerged in the mid-1970s. The systems promised to make complete, up-to-the-minute customer information instantly available. "The customer wants one statement with checking, Visa and mortgage information," said William Conklin, an independent consultant in Boston.

Major data processing shops, among them those in financial institutions, began looking at these systems. "A company must develop this type of system to keep pace with its competitors," said Ronald G. Ross, editor of "Data Base News," a Marblehead, Mass., publication. "Any com-

See ON-LINE page 100

Six indicted in alleged Apple scam

By Patricia Keefe
CW Staff

PHILADELPHIA — A federal grand jury here recently returned two separate indictments against six individuals and five companies, charging them with criminal conspiracy and smuggling of computer parts into the U.S. from Taiwan. Those parts are alleged to be counterfeit Apple Computer, Inc. Apple II components.

Information from the year-long Philadelphia investigation was funneled through U.S. Customs' Operation Tripwire, resulting in seizures of smuggled, allegedly counterfeit Apple computers in New England, San Francisco and Los Angeles, according to David E. Warren, special agent-in-charge of U.S. Customs Service here.

Operation Tripwire seeks to stop the importation of foreign-manufactured goods that infringe upon U.S. copyrights and trademarks. Warren explained that Customs believes there is a link between these operations, and that it is possible several of the six indicted here may be ring leaders.

The indictments marked "the first time a case has been brought for a customs violation [smuggling] in connection with the importation of computers that are copies of computers manufactured in the U.S.," according to the U.S. District Attorney's office here. (Although U.S. Customs officials raided three California companies last month, netting 1,000 Apple II look-alikes, no charges have been filed as yet.)

Although "there can be no doubt" that the Philadelphia defendants were importing counterfeit Apple II components, the U.S. District Attorney's office here does

See APPLE page 98

MSA
The Information Company

Management Science America, Inc. opens West Coast sales office to provide single source for their own software and products from other vendors/94

IBM

Large systems still count, IBM tells shareholders in annual report stressing conservative management/97

INSIDE

■ Harris Corp. focuses word processing strategy around units from recently acquired Lanier Business Products, Inc./94

■ Longstanding dispute heats up between Software Arts Products Corp. and Visicorp over marketing of Visicalc and next generation/96

Instant Cure for Computer Indigestion

John Brad & Company

MSA division to distribute micro software

By Jeffry Baxter
CW West Coast Bureau

LOS ANGELES — Management Science America, Inc. (MSA) has opened an additional sales division in a move designed to aid information systems directors in stemming the spread of incompatible microcomputer programs within large corporations.

MSA's Micro Distribution Division (MDD) will serve as an additional sales arm both for the company's own Peachtree Software, Inc. subsidiary and for many rival publishers of microcomputer applications as well, the company said.

MDD, headquartered here, will evaluate a host of programs representing each of the major generic categories of commercial personal computer applications — spreadsheets, word processing, graphics, communications, accounting, data base management, project scheduling and windowing. The ultimate aim of the exercise is to identify the top three or four big-business-oriented packages in each category, according to the company's senior vice-president, Howard Smith Jr.

Although at least a few of the chosen applications will undoubtedly bear Peachtree's label, the majority will be supplied by other vendors, Smith said. All the packages, however, will be required to run on IBM or IBM-compatible personal computers.

Once a particular product has won MSA's final approval, MDD will buy and warehouse multiple copies of the program. Through its own independent sales staff, the division will then approach large corporations throughout the U.S., offer to analyze their total systems environments and supply the right combination of micro software packages to meet their individual needs.

To take advantage of MDD's services, however, clients will have to commit to buying at least $100,000 worth of personal computer applications per year. "Companies that spend less than that amount for microcomputer software will probably continue to buy through traditional sources like retail stores," Smith said.

In addition to selling a wide variety of personal computer packages, the division will serve as a liaison between its customers and its cooperating publishers' support staffs. MSA is thus striving to offer big business a much needed single source, not only for all its microcomputer software, but also for all its maintenance and user training, Smith said.

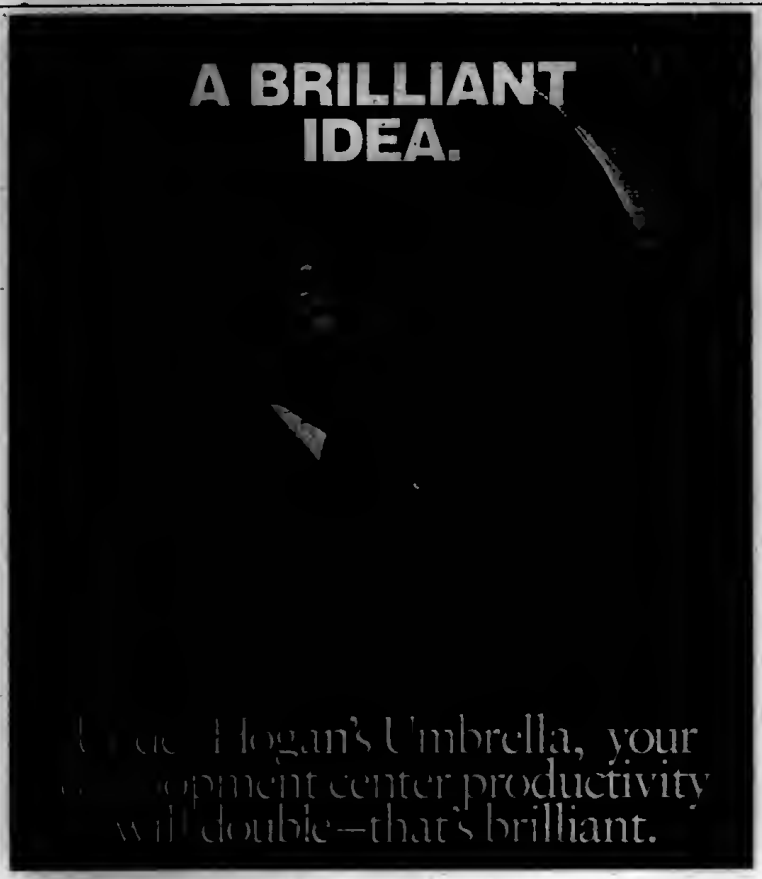
Single sourcing, in turn, will enable MIS managers to control tightly their companies' software purchases, avoid the installation of incompatible systems and, therefore, promote the adoption of effective personal computer standards, he added.

MDD will also provide large corporate accounts with several other software-related services, including:

- Pricing discounts typically ranging from 15% to 30%.
- A series of nationwide, quarterly forums that will give customers an opportunity to discuss their personal computer applications needs with many of the industry's leading program publishers.
- An IBM Personal Computer-compatible add-on board with a prerecorded tutorial and a voice-synthesis unit that together will teach microcomputer operators how to use each MDD-supported application.

Formation of MSA's latest division follows the completion of a recent survey in which MSA sought to analyze the microcomputer installations and needs of the 2,000 largest corporations in the U.S. The study reportedly uncovered a widespread dissatisfaction with traditional methods of acquiring microcomputer software.

"Many big companies still buy most of their microcomputer programs through their local computer stores, but they're not entirely pleased with that arrangement," Smith said. "They dislike having to deal separately with five or six different vendors and would much rather get all their software, service and support from the same source."



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Harris strategy to target Lanier

MELBOURNE, Fla. — Harris Corp. announced recently that its strategy in the word processing market will focus on the products of its recently acquired subsidiary, Lanier Business Products, Inc., and that Lanier's OneStep software package will be the companywide word processing standard for all Harris information systems.

Harris will also present its Harrisnet local-area network architecture as the standard networking architecture for all Harris and Lanier information system products. That architecture, according to the company, will be applied first to the Lanier

See HARRIS page 95

Semi bookings for U.S. mart forecast to slip

By Robert Batt
CW West Coast Bureau

NEWPORT BEACH, Calif. — After reaching record levels in the fourth quarter of 1983, semiconductor bookings for the U.S. market will decline by 12% in the first three months of this year, according to In-Stat, Inc.

In a report presented to the Seventh Annual Information Services Seminar, sponsored by the Semiconductor Equipment and Materials Institute, Inc., In-Stat said bookings for the U.S. market will decline from a total of $8.1 billion in the fourth quarter to $2.7 billion in the current quarter.

Addressing the seminar, Jack Beedle, president of the Scottsdale, Ariz.-based market research firm, said the "splurge" to the last three months of '83 witnessed many manufacturers becoming increasingly gun-shy about product shortages, placing annual purchase orders in an effort to ensure sufficient products to meet rapidly increasing sales forecasts for 1984.

Semi bookings leap

December semiconductor bookings, he claimed, leaped by $1.00 million over November levels to $3.1 billion, while sales moved up to $4600 million.

While there will be a relative downturn to the first quarter of 1984, Beedle predicted that semiconductor bookings will still increase by 20% for the year, after increasing 68% in 1983.

He said a smaller book-to-bill ratio this year will allow both suppliers and end users to schedule products more effectively.

At a press conference following the seminar, Beedle claimed 1984 should be a strong year for U.S. semiconductor manufacturers as compared with their Japanese counterparts.

"The Japanese manufacturers have serious problems at the moment...They are hard pressed to supply their own clients due to the vertically integrated nature of their organizations and because of the tremendous amount of Japanese chip manufacturers that are trying to enter the lucrative computer industry," he claimed.

More good news

Citing more good news for U.S. vendors, Beedle asserted that domestic suppliers are now mounting a viable challenge to Japanese dominance in the 64K-byte dynamic random-access memory (RAM) market. A prime example, according to Beedle, is Mostek Corp., which "came from nowhere to become the world's third-largest manufacturer of 64K dynamic RAMs."

Remarking on the state of the industry, James Webster, director of product program management at IBM's General Technology Division, said the biggest single force in improving price/performance in the computer industry is the march of technology.

That IBM has been able to make price/performance improvements in the region of 20% a year is due almost entirely to the fact that semiconductor technology is growing at an even faster rate than the DP industry itself, he asserted.

But Dan Ross, president of the Los Altos, Calif.-based consulting firm Ross Associates, Inc., told attendees at the post-seminar press conference that a string of recent economic indicators heralds the possibility of a downturn in the economy at a time of record backlogs for chip manufacturers.

The expectations of spectacular growth to the industry during the next four years may therefore turn out to be premature, according to Ross.

HARRIS from page 94

5000 series and a new family of Harris distributed data processing systems and later to Harris superminicomputers, interactive and remote job-entry terminals as well as to a new generation of integrated voice and data private branch exchange products.

John T. Hartley, president of Harris, said the company has refined its market focus to take advantage of Lanier's installed base of 55,000 stand-alone word processing units and will concentrate on the recently released Lanier Business Processor 1000 and the Business System 5000 clustered network as its building blocks in the word processing market.

Harris also announced its Distributed Office Systems Division will be separated into its original two components: the Harris Distributed Products Division, to be headquartered in Dallas and managed by J. Whitney Haney, who was previously responsible for the Distributed Office Systems Division; and the Word Processing Division, based here under Lanier Business Products and reporting to William J. Kelly, vice-president of research and development for Lanier.

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'Visicalc' lawsuits proliferate

BOSTON — Lawsuits between Software Arts Products Corp. in Wellesley, Mass., and Visicorp in San Jose, Calif., have proliferated in recent weeks, as a long-standing disagreement between the two firms has heated up.

On Feb. 10, Visicorp was denied a temporary restraining order that would have prevented Software Arts from using the trademarks "Visi," "Visicalc" and "Visicalc Advanced Version."

Visicorp's suit was filed in response to an answer and counterclaims filed by Software Arts on Feb. 7. This answer amended a countersuit Software Arts filed here last fall and charged Visicorp with breach of contract, while seeking to terminate an agreement that allows Visicorp to market Visicalc.

The agreement, signed in 1979, allowed Visicorp to market Visicalc, a spreadsheet program developed by Software Arts. In 1979, the program ran only on Apple Computer, Inc.'s Apple II microcomputer. Under the agreement, Software Arts was responsible for enhancing Visicalc and tailoring it to other microcomputers.

Last September, Visicorp filed suit in a California court claiming that Software Arts was late delivering new versions of Visicalc for a number of microcomputers, including the IBM Personal Computer. Visicorp accused Software Arts of using money earmarked for Visicalc enhancements to develop TKSolver, an equation processor.

Software Arts denied the charges and countersued Visicorp for nonpayment of royalties, not promoting Visicalc to the best of its ability and developing Visioncalc, which runs under Visicorp's Visi-On. Software Arts claimed that Visioncalc is an enhanced Visicalc — so Visicorp should have offered Software Arts the opportunity to develop the program — and that Visicorp should pay Software Arts royalties for the product. However, Visicorp claimed that the product was developed from scratch.

Software Arts has indicated that it plans to market Visicalc with its own trademark. "One of the bylaws in the 1979 agreement states that if a breach of contract occurs, the Visicalc trademark reverts to Software Arts," said Thomas Moffei, a lawyer for the Boston firm of Choate, Hall & Stewart, which is representing Software Arts.

M&D to market Software International's

NATICK, Mass. — In a move intended to skirt an injunction that has frozen international sales of McCormack & Dodge Corp.'s (M&D) G/L Plus general ledger package, M&D last week entered into an agreement with Software International, Inc. of Andover, Mass., for international marketing rights to Software International's The System report writer subsystem.

The System is substantially similar to Fast, a report writer developed by ABC Management Systems, Inc. of Bellingham, Wash., and sold by M&D as part of G/L Plus.

M&D has been enjoined from selling Fast internationally as the result of a suit brought by ABC last year. In November, a superior court judge imposed the injunction and awarded $2.5 million to ABC [CW, Dec. 5]. The judge also awarded $300,000 to Software International for reimbursement of expenses incurred in fighting a countersuit by M&D against ABC and Software International. On Feb. 1, a state appeals court upheld the injunction against M&D.

An M&D spokesman said the agreement with Software International, which is valued at over $1 million, will effectively settle all claims between the two vendors. However, an appeal by M&D

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'The System' in effort to avoid 'Fast' injunction

is still pending in its litigation with ABC.

If the agreement is approved by the court, M&D will offer The System as a subset of G/L Plus. However, the software must undergo modifications, a process which could take several months. The spokesman said the deal was negotiated so that M&D international sales representatives could continue to market G/L Plus with the promise that a Fast look-alike would be available soon. M&D has also pledged to replace the Fast subsystem with its own report writer sometime in the third quarter of this year.

M&D Chairman James M. McCormack said the deal was negotiated after attempts to reach an out-of-court settlement with ABC had failed. "It became clear after extensive negotiations that there was no interest from ABC Management Systems in a reasonable settlement of this dispute," he said.

"That's an absolute lie," commented Vernon Ruskin, president of ABC. "We offered them a settlement over a month ago, and we haven't heard from them since. They haven't negotiated seriously." The M&D spokesman would not comment on Ruskin's countercharge.

Ruskin estimated it would take six months for M&D to modify The System, which is based on a later version of the ABC report writer, for use with G/L Plus. "I don't see how they could market [The System] without making these changes," he said. Ruskin added that ABC lawyers believe the agreement between M&D and Software International is "not feasible."

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IBM aiming to reassure bondholders

ARMONK, N.Y. — Despite its rapid and profitable domination of the microcomputer market, IBM's "large systems still account for a substantial portion of revenues," the company reported in a just-released annual report aimed at reassuring shareholders of a continued conservative management style.

"Management is mindful of the risks inherent in high technology, the growing scope and quality of competition and uncertain economic conditions," IBM's report said. A major consideration of management is conservation of capital. In 1983, according to the report, IBM increased its cash on hand and marketable securities to $6.5 billion, up from $3.3 billion in 1982, and at the end of the year had accumulated total working capital of $7.7 billion, up from $4.8 billion at the end of 1982.

Along with that increase in liquidity, the company continued to decrease its investment in equipment for rentals, "consistent with the changing character of our business," decreasing that portion of its assets before depreciation to $12.4 billion, down from $16.5 billion in 1982. Revenues from rentals declined about 17% to $8.2 billion.

A key management strategy, according to the report, is cost control through maximized productivity, and IBM held increased investment in plant and other property to 6% over the previous year, as general and administrative expenses climbed 14% and research and development expenditures climbed 17%.

A further indication of IBM's strategy of keeping its assets liquid was the disclosure that IBM Credit Corp. increased its purchases of installment payment agreements from the parent company to $848 million in 1983, up from $682 million in 1982, and purchased $334 million of IBM products for term lease customers, up from $67 million in 1982.

Computer counterfeiters gaining in numbers

During fiscal 1983 and the first quarter of fiscal 1984, over $9.2 million of counterfeit computers were seized by U.S. Customs Service officials throughout the U.S., estimated Special Agent-in-Charge David E. Warren of the Philadelphia office of the Customs Service.

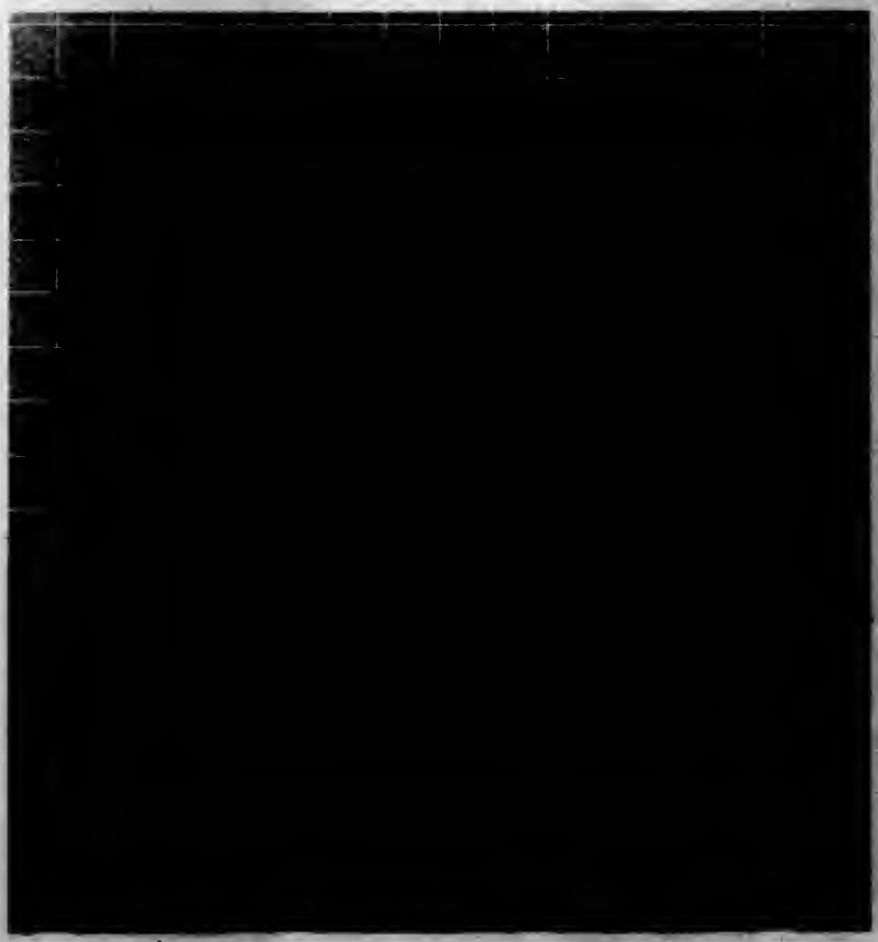
Apple Computer, Inc.'s Apple II and II+ and video games have been among the primary targets of computer counterfeiters. Even industry giant IBM is beginning to experience problems and has recently registered some copyrights with Customs, according to Gary Hecker, a copyright and patent attorney representing Apple.

In Taiwan alone, there are five to 10 major companies manufacturing counterfeit computers and literally hundreds of smaller manufacturing and trading companies as well, Hecker estimates.

Counterfeiters are so numerous that fake Apples actually outsell the real thing 10 to one in Taiwan, the attorney said.

Among the variety of ways counterfeiters are attempting to evade detection by the Customs Service:

- Concealing components in shipments of other goods, like heavy machinery.
- Sending computer components in separate packages, via air mail and air freight, to private residences or separate addresses.
- Falsifying package labeling as to contents and value or falsifying cargo documentation.
- Shipping completed computers minus printed-circuit boards or read-only memories, which are shipped under separate cover.



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APPLE from page 93

not intend to pursue the issue of copyright infringement, according to Ewald Ittlien, an assistant U.S. district attorney handling the case. Instead, Apple will have to decide whether to pursue any alleged copyright violations through civil litigation, he said. An Apple spokeswoman said the vendor is considering such action.

However, Ittlien said "there is no question that they [the defendants] had it in mind that they could not get these components into the U.S. unless they concealed them in other shipments or by mislabeling packages and, in some cases, addressing these packages to their homes." Ittlien noted that when "you turn the [assembled computer] on, it says 'Apple.' " And, he added, the parts are so similar, that when placing their orders, the defendants asked for Apple II parts.

An initial tipoff from Apple about illegal sales in the area included one company that was already under investigation for other customs violations, Warren said. Four of the six in Philadelphia were nabbed via a sting operation involving local police, customs officials and some technical assistance from Apple.

The first indictment concerns Alberto E. Chua and Alfonso D. Keh and their three import companies. The two men are each charged with four counts of smuggling and one count of conspiracy. Specifically, they are accused of smuggling counterfeit Apple II parts into the U.S. and selling them to Joel M. Isadore and Daniel Ryan.

Chua and Keh each face a maximum prison sentence of 25 years and a maximum fine of $50,000. Their three companies are each charged with one count of conspiracy; two of the three are also charged with two counts of smuggling and face a maximum fine of $20,000, and the other faces a maximum fine of $10,000.

Isadore is also charged with conspiracy in the second indictment, which concerns the alleged activities of Robert Ellis, his two import companies and his son David. The senior Ellis is charged with four counts of smuggling and one count of conspiracy and faces the same penalties as Chua and Keh.

Ellis is alleged to have asked Taiwanese manufacturers to send fake Apple II parts via air-mail parcel post in mislabeled packages, each as "electric part samples, no commercial value." The indictment further alleges that the three men received counterfeit Apple parts and assembled look-alike computers from February to April 1983.

LOTUS from page 93

the first quarter of 1983 and 160,000 in the second quarter, the newcomers are going to have to ship in the hundreds of thousands, and do it quickly in able to corner the marketplace before new developments overtake them.

Secondly, as the competition heats up it's going to take many more millions of dollars to market a new product successfully.

So there are likely to be few Lotuses in the future and more and more software developers signing up to established muscle, like Microsoft, and maybe even Lotus itself.

COMPUTER INDUSTRY

NICKELS & DIMES

Compaq Computer Corp. posted a yearly profit of $4.7 million, or 24 cents per share on sales of $111 million during 1983, its first year of operation. Profit in the fourth quarter totaled $5.3 million on sales of $52 million.

■

Vector Graphic, Inc. announced its results for the second quarter, posting a $1.9 million loss on sales of just $3.3 million, compared with a profit of $107,000 and sales of $11.9 million posted during the same period a year ago.

■

The Ultimate Corp. has announced third-quarter revenues of $18.5 million and earnings of $2.7 million, or 28 cents per share, up 75% and 116%, respectively, over the same period last year.

■

Computer Task Group, Inc. has reported revenues for 1983 of $54.2 million, up from $40.1 million a year ago. Earnings increased 27% to $1.5 million.

■

Perkin-Elmer Corp. recently reported second-quarter profits of $14 million, or 32 cents per share, up 38% over the same period a year ago, on revenues of $288.7 million, up 6% over the year-earlier figure. Profits for the first six months of fiscal year 1984 were up just $1.5 million over the previous year, reflecting a poor first quarter in 1984 when profits were $8.6 million, down $2.3 million from the year-earlier benchmark, on revenues of $248 million.

■

Computer Consoles, Inc. has reported that revenues for 1983 rose 31% to $103.6 million, up from $79.1 million for 1982. Net income was $10.4 million, or 87 cents per share, up 40% from $7.4 million, or 66 cents per share, in the prior year.

Gray Research, Inc. has reported revenues of $82.8 million and earnings of $19.2 million, or $1.31 per share, for the fourth quarter ended Dec. 31, compared with revenues of $62.6 million and earnings of $12.2 million, or 87 cents per share, for the comparable period last year.

■

Electronic Data Systems Corp.'s earnings per share for the second quarter of fiscal year 1984 were 31 cents per share, up 24% from the same period last year. Quarterly revenues rose 22% to $1189.6 million, and profits were up 24% to $17.5 million.

■

Prime Computer, Inc. recently announced it had successfully renegotiated its $100 million line of credit with six major banks, extending the initial agreement through 1991 and reducing borrowing costs and compliance requirements.

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ON-LINE from page 93

pany using technology must incorporate the latest technical developments into its operation."

Realizing how complex on-line data base systems are, some companies joined forces with application vendors to design these systems. But few banks, insurance or financial companies had any experience designing and implementing data base systems. They underestimated the cost and complexity of the projects.

"Millions of dollars were thrown away developing elaborate on-line data base systems that were never delivered," said Michael Salsberg, principal at the Plagman Group, Inc., a New York consulting firm specializing in data base technology. "Problems arise when users with diverse needs access the same data."

Design methods, not technical limitations, create problems. "Some vendors and data processing departments undersold the difficulty of designing these systems," Ross said. "Even with technical advances, companies must take a comprehensive analytical look at system needs, set realistic expectations and be totally committed to the system.

"The technology can be improved, but problems surface from the scope and design of the system. Many companies do not have the proper administrative structure in place to design and implement these systems."

In some cases, project control slipped away. "These are huge systems, too large for one person to design," Ross said. "Since this is the nature of the beast, conventional design approaches won't work. Implementation has to be different. Each module has to fit into the system. There has to be division of labor to ensure that the system is well designed."

Conventional programmers often do not have the proper tools to design these systems. "Data processing managers have to retrain their people," said Dan Nolan of Heuristic Development in Annandale, Va.

"Data processing departments must invest in their people. No one works with hexadecimal anymore. They must stop programming in Cobol and other languages and work with the new natural languages," he said.

Another problem is that vendors often build too many features into the system. "There were features in the [Anacomp] CIS system that were not needed," said Conklin. "It had features like simultaneous batch and on-line processing, which a bank doesn't need. Anacomp built the system so that it was easy to sell and maintain."

Hogan Systems, Inc. in Dallas succeeded where Anacomp failed. Its on-line banking system, less ambitious than the Anacomp system, is up and running.

Grandiose design also haunted Insurance Systems of America, Inc.'s system. After purchasing the system, Maryland Casualty changed system specifications and delivery dates. "Since the sale, there has been an improvement in meeting delivery dates," said Lawrence Bacon, second vice-president of data processing at Travelers' Insurance Co. "The quote portion of the general liability system is up and running in 78 Travelers' service offices."

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SUPERSHORTS

Reynolds & Reynolds Co. has announced an agreement with NCR Corp. in which NCR will provide advanced computers as new additions to Reynolds' line of VIM/NET Systems. Under the two-year agreement, Reynolds will purchase approximately $20 million in enhanced models of NCR's Tower 1632 data processing units. Reynolds will market the units as part of a configuration for very large vehicle dealers.

■

Dr. John McCarthy, creator of the Lisp programming language, and Dr. Douglas Lenat, professor of Computer Science at Stanford University, have been named to the newly formed Scientific Advisory Board at Inference Corp., an artificial intelligence company.

■

Western Union has been awarded a contract by Eastern Airlines to provide its Easylink electronic mail service to subscribers to Eastern's automated reservations and ticketing system, the System One Direct Access System, over a three-year period beginning this spring.

■

Warner Software, Inc. has acquired all publishing, marketing and licensing rights to The Desk Organizer, a desk management software product for the IBM Personal Computer, developed by Conceptual Instruments Co.

■

AT&T Information Systems, Inc. and **United Technologies Building Systems Co.** have announced an agreement in principle for forming a joint venture. The new venture will offer information services to the tenants and the owner/managers of multi-tenant commercial buildings.

■

AT&T Information Systems, Inc. and **Hewlett-Packard Co.** have completed joint certification testing of HP 3000 Business Computers, HP 150 Personal Computers and HP data terminals to ensure compatibility with AT&T Information System's Dimension System 85.

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The Trinity University computing environment consists of IBM 3081/MVS with VM-VSI/CICS/CMS/DBMS, Apple IIs, networked IBM PCs and PDP 11/84.

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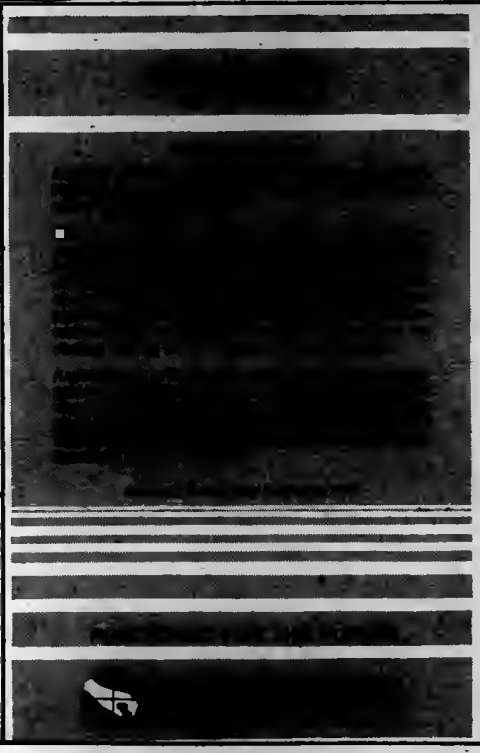

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OS/VS Systems Software Developer will develop and maintain the SAS supervisor and related components for the IBM OS/VS and MVS/XA environments. Use of IBM 370 Assembler as a programming language and exposure to OS/VS supervisor and data management service macros are required. Experience with the development and support of large software systems and the use of IBM service aids is desirable. Familiarity with operating system concepts, compiler design and implementation, PL/I, and the SAS System are significant assets. A bachelor's degree, preferably in computer science, or equivalent is required.

Compiler Systems Developer will be responsible for the design and implementation of a PL/I-like compiler. Applicants must have a MS in computer science or mathematics and a strong background in block structured languages, preferably in PL/I. Experience in design and construction of state-of-the-art compilers and familiarity with optimization and code generation issues are required.

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Minicomputer Programmer will develop the SAS System for various minicomputers. The individual will write and maintain code and documentation, transport code, prepare master tapes, and educate users. A BS degree, preferably in computer science, and PL/I knowledge are required. Minicomputer experience, knowledge of SAS software, and Assembler language experience are preferred.

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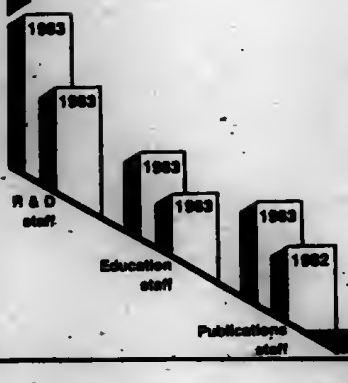

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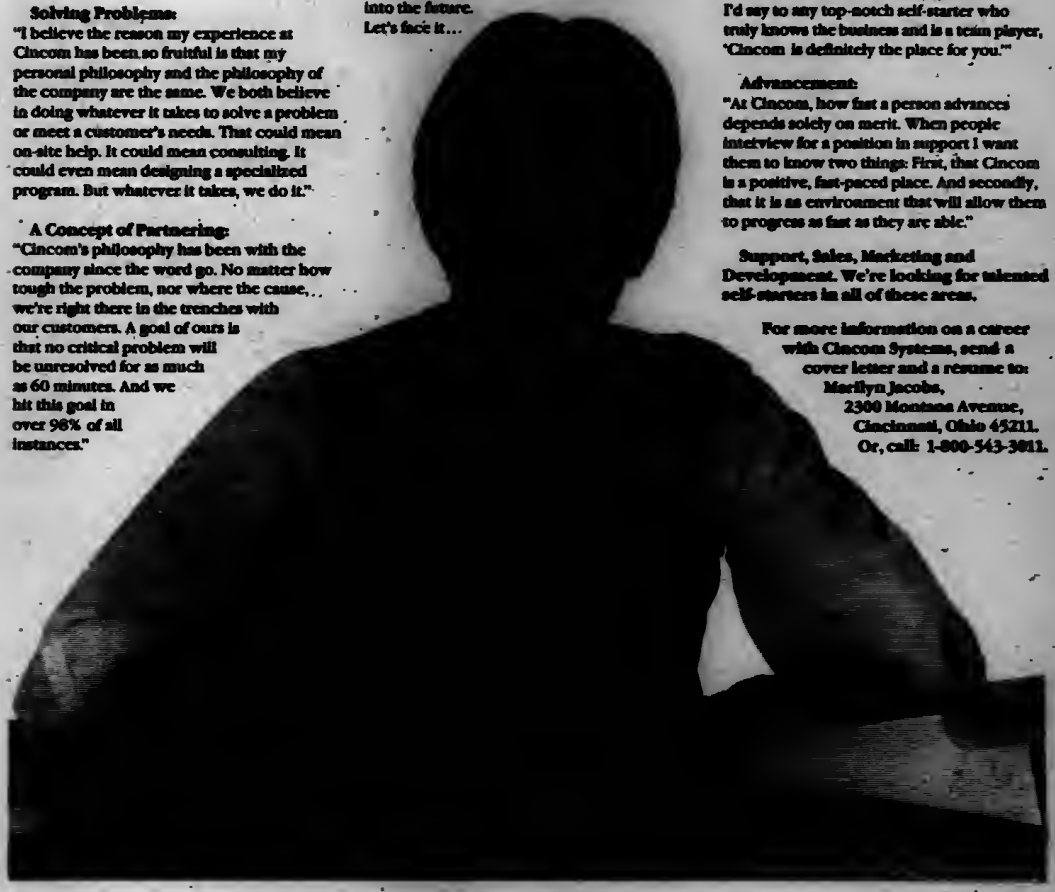

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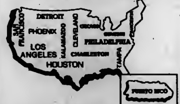

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DIRECTOR OF DATA PROCESSING

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- Minimum 3 years recent experience on IBM mainframe
- Proficient in COBOL and ALC
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Assistant Vice President-Systems Development
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EOE M/F/H/V

EDP Professionals

Middle South Services has one of the South's largest data processing centers serving one of the nation's largest power systems. Middle South Utilities, our parent company, is a major electric utility. Our hardware environment includes two IBM 3081s, and IBM 4341 and Tandem mini 16s. If you are a career-minded EDP professional, we have the following opportunities available:

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UNIX*, C, PDP11, M68000

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97 Humboldt Street
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CCI COMPUTER CONSOLES INCORPORATED

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SYSTEMS PROGRAMMERS

Outstanding career opportunities are now available with the Philadelphia area's most prestigious teaching hospital which enjoys a national reputation for its innovative, trend setting medical research and treatment. These openings are specifically involved with our Radiology Department which has figured prominently in state-of-the-art technological applications.

In one position qualified candidates will work on our development radiology research computer system, including real time systems, programming, networking, image acquisition and display systems. A Bachelor's Degree in Engineering or Computer Science and a minimum of 2 years in systems programming (assembly language) with DEC computer systems is necessary.

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HP Dept. CW
2007 South Park Place
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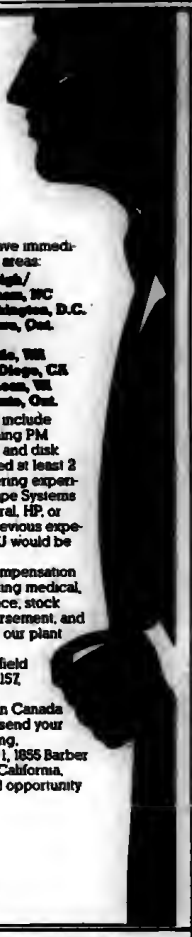

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Data Processing

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Personnel Department,
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We can do the same thing for you as we have done for Willard Payne and many thousands of others. Come in. Call. Or mail your resume to the NCA firm nearest to you. Confidentiality is assured. Company clients assume our fees.

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Lexington, Massachusetts 02173 (617) [illegible]

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Chicago, Illinois 60606 (312) 977-[illegible]

COLUMBUS: Michael Thomas, Inc.
65 E. Wilson Bridge Road, Suite 201
Worthington, Ohio 43085 (614) 846-[illegible]

DALLAS: DataPro Personnel Consultants
12720 Hillcrest, Suite 520
Dallas, Texas 75230 (214) [illegible]

DETROIT: Electronic Systems Personnel, Inc.
3000 Town Center, Suite 2540
Southfield, Michigan 48075 (313) 651-5500

FLORIDA: Data Sciences Personnel, Inc.
P.O. Box 8577
Hollywood, Florida 33084 (305) 494-8112

HARTFORD: Compass, Inc.
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Hartford, Connecticut 06105 (203) 549-4240

HOUSTON: Career Consultants, Inc.
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Houston, Texas 77056 (713) 626-4100

INDIANAPOLIS: Computer Personnel Services, Inc.
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Indianapolis, Indiana 46204 (317) 634-4712

KANSAS CITY: D. P. Career Associates
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Shawnee Mission, Kansas 66202 (913) 236-[illegible]

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Personnel Service
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Encino, California 91316 (213) 986-4400

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MINNEAPOLIS: Electronic Systems Personnel
954 Twin City Federal Tower, 121 S. 8th St.
Minneapolis, Minnesota 55402 (612) 338-6714

NEW JERSEY: Systems Search
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Millburn, New Jersey 07041 (201) 761-[illegible]

NEW YORK: Data Associates, Inc.
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Greensboro, North Carolina 27405
(919) 373-1401

PHILADELPHIA: Systems Personnel, Inc.
115 West State Street
Media, Pennsylvania 19063 (215) [illegible]

PHOENIX: Professional Career Consultants
4020 North 17th Street, Suite H101
Phoenix, Arizona 85016 (602) 274-[illegible]

SAN FRANCISCO: The Computer Resources Group, Inc. Agency, 303 Sacramento Street
San Francisco, California 94111 (415) 398-[illegible]

SEATTLE: Houser, Martin, Morris & Associates
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Application deadline is March [illegible], 1984. NAU is an Equal Opportunity/Affirmative Action/Title IX/Section 504 Employer

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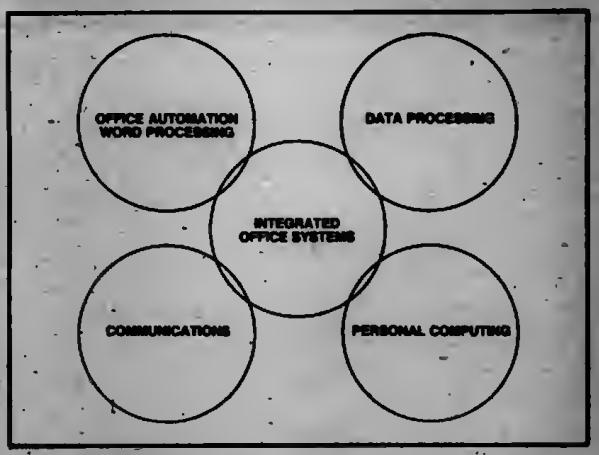

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Aircraft Division

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Government Electronics Group

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MVS SYSTEMS PROGRAMMER

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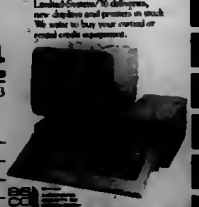

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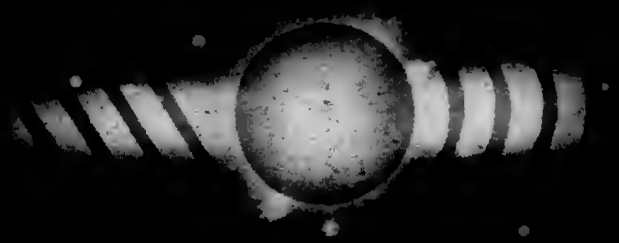

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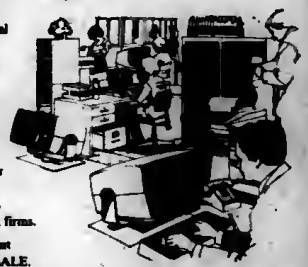

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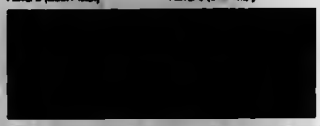

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ADVERTISERS INDEX

ACC 38
AFR 7
American Telephone & Telegraph 80-81
American Telephone & Telegraph Info Systems 84-85
Applied Software 82
A.S.T. Research ID/15
ASSTAR Technologies 64

B E Meyle & Associates, Inc. 15
John Brad 58
Buck Merchandising 68
BMS Systems, Inc. 58
Brodie & Babbage 86

Cipher 60-61
Collier Jackson, Inc. 10
Comdex 50
Com/Pak-world, Inc. 35
Component Technology 96-97
Computer Power Systems 48
Context MBA 44
Corona Data Systems ID/7
CR Computer Systems 47
CR Software 86
CW Ads 89
CW Mixer 100
CW Supplement 72

Dataproducts 11,13,17,48
DEC/TPS 64-67
DEC Professional 29
Diebold, Inc. ID/4
Digital Controls Corp. ID/6
Docken Products ID/16
Dysan 98

Electronic Kodak Co. 69
Electronic Life Leasing 26
Epson Office Systems 70-71

Fusion Products 43

Gold Systems International 46

Hitachi ID/10
Hogan 94
Hubbard Systems ID/8
Hughes Aircraft 54

IBM 45-49
Infodata 7
Information 35
Information Science, Inc. 28
Information Sciences 66-68
Integrated Business Computers 58
Intelligent ID/5
Interactional Computers ID/11

Johnson Systems 85

Keytronic ID/3

J.W. Lampl, Inc. 14
Lawson Associates 14
Local Data ID/14

MacMillan Book Clubs 72
Macrosoft 30
Martin Marietta 76
Mathematica 31
MCBA 18
McCormack & Dodge 40
Micro Credit Corp. ID/16
Microdata 78-79
Micro Focus 56-57
Micro Marketwave 87
MRA 62-63
MTI Systems Corp. 11,15,17

National Semi Conductor 12
NCR 83
NCR Corp. 52
Nine Generation Software 32
Northern Telecom 74-75

On-Line Software 87,90

Parallax Systems 13

QMD Information Sciences 60
Quasi 26-27

Radio Shack 54
Randack Corp. 58
R. L. Rayer 16

SAS Institute ID/8-ID/9
SBM 40
Signal Technology Inc. 12,ID/11
SMC Software Systems 36
Software Architects 24
Software Automation 88
Software Express 44
Software International 20-22
Software Results 14
Software Technology 42
Sperry Corp. 22
Starfish 77
Stone Mountain Computing 60
Syscomm 8

Tandem Computers 30-31
Telecomm, Inc. 46-47
Tel Tech 10
Teletype Corp. ID/12,59-63
Time Software 96

Tokyo Computing 51
Vantel 126
Visual Technology 60
VM Software, Inc. 9

Wang Laboratories 33
Western Telecomm ID/2

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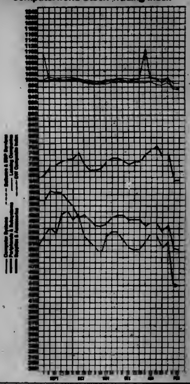

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CLOSING PRICES WEDNESDAY, FEBRUARY 15, 1984

COMPUTER SYSTEMS

EXCH		1983-84 RANGE (1)	CLOSE FEB 15 1984	WEEK NET CHNGE	WEEK PCT CHNGE
O	ALPHA MICROSYSTEMS	11- 34	12 1/8	+ 1/8	+0.0
O	ALTOS COMPUTER SYST	8- 30	14	+1	+11.1
A	AMDAHL CORP	8- 30	13	- 3/8	-3.0
O	APPLE COMPUTER INC	18- 30	28 1/2	+1 7/8	+6.0
N	AT&T	60- 30	20 1/8	- 8/8	-0.8
N	BURROUGHS CORP	38- 30	47	- 3/8	-0.7
O	COMPUTER AUTOMATION	8- 17	8 1/4	+ 1/4	+3.1
A	COMPUTER CONSOLES	8- 30	10	- 3/8	-4.7
N	CONTROL DATA CORP	21- 33	38 3/8	-1 3/8	-3.8
O	CONVERGENT TECHNOL	10- 41	10	+ 1/8	+1.4
N	CRAY RESEARCH INC	20- 30	42 7/8	-1 7/8	-4.1
N	DATA GENERAL CORP	32- 47	41 1/8	1/2	+0.4
N	DATAPOINT CORP	11- 38	20 3/8	-1	-4.8
N	DIGITAL EQUIPMENT	80-133	30 1/4	3 7/8	-3.4
A	[illegible] INC	8- 40	12 1/8	- 3/8	-0.0
A	ELECTRONIC ASSOC.	8- 40	9 3/4	- 3/8	-11.3
N	FLOATING POINT SYST	18- 40	27 7/8	+1 3/8	+5.1
O	[illegible]	22- 47	30 3/4	-3 1/8	-8.3
O	GENERAL AUTOMATION	2- 10	11 3/8	+ 1/8	+1.1
N	GOULD INC	28- 30	20 1/8	+ 3/8	+1.8
N	HARRIS CORP	25- 41	38 1/2	+ 3/8	+1.0
N	HEWLETT-PACKARD CO	25- 30	38 1/4	- 1/4	-0.8
N	HONEYWELL INC	29- 30	54 1/8	-1	-1.8
N	IBM	97-134	120 3/8	+1 7/8	+1.7
O	IPL SYSTEMS INC	8- 14	4 7/8	- 1/8	-2.8
N	M/A-COM INC	38- 30	28	- 3/8	-3.7
O	MAGNUSON COMP SYSTS	1- 9	3/8	0	0.0
O	MANAGEMENT ASSIST	7- 28	20 1/8	+ 1/8	+0.8
O	MATSUSHITA ELEC(ORD)	43- 30	38 1/2	- 3/4	-0.8
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SOFTWARE & EDP SERVICES

EXCH		1983-84 RANGE (1)	CLOSE FEB 15 1984	WEEK NET CHNGE	WEEK PCT CHNGE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

LEASING COMPANIES

EXCH		1983-84 RANGE (1)	CLOSE FEB 15 1984	WEEK NET CHNGE	WEEK PCT CHNGE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

COMPONENTS

EXCH		1983-84 RANGE (1)	CLOSE FEB 15 1984	WEEK NET CHNGE	WEEK PCT CHNGE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

PERIPHERALS & SUBSYSTEMS

EXCH		1983-84 RANGE (1)	CLOSE FEB 15 1984	WEEK NET CHNGE	WEEK PCT CHNGE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SUPPLIES & ACCESSORIES

EXCH		1983-84 RANGE (1)	CLOSE FEB 15 1984	WEEK NET CHNGE	WEEK PCT CHNGE
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